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## IONOSPHERIC DATA

ISSUED  
JANUARY 1955

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## IONOSPHERIC DATA

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## SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in Document No. 626-E referred to above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, L, M, N, Q, S, or T are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of  $f_oF_2$  (and  $f_oE$  near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of  $h'F_2$  (and  $h'E$  near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:

1. For  $f_oF_2$ , as equal to or less than  $f_oF_1$ .
2. For  $h'F_2$ , as equal to or greater than the median.



The symbol W is included in the median count only when it replaces a height characteristic. This practice represents a change from that listed in issues previous to CRPL-F78.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E ( $E_s$ ):

Values of  $fE_s$  missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median  $f_oE$ , or equal to or less than the lower frequency limit of the recorder.

Values of  $fE_s$  missing for any other reason, and values of  $h'E_s$  missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when  $f_oF_2$  is less than or equal to  $f_oF_1$ , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of  $f_oE$ . Blank spaces at the beginning and end of columns of  $h'F_1$ ,  $f_oF_1$ ,  $h'E$ , and  $f_oE$  are usually the result of diurnal variation in these characteristics. Complete absence of medians of  $h'F_1$  and  $f_oF_1$  is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number									
	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945
December	11	15	33	53	86	108	114	126	85	38
November	10	16	38	52	87	112	115	124	83	36
October	10	17	43	52	90	114	116	119	81	23
September	8	18	46	54	91	115	117	121	79	22
August	8	18	49	57	96	111	123	122	77	20
July	8	20	51	60	101	108	125	116	73	
June	9	21	52	63	103	108	129	112	67	
May	10	22	52	68	102	108	130	109	67	
April	10	24	52	74	101	109	133	107	62	
March	11	27	52	78	103	111	133	105	51	
February	12	29	51	82	103	113	133	90	46	
January	14	30	53	85	105	112	130	88	42	

## WORLD - WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 144 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:  
Buenos Aires, Argentina  
Decepcion I.

Commonwealth of Australia, Ionospheric Prediction Service of the  
Commonwealth Observatory:  
Brisbane, Australia  
Canberra, Australia  
Hobart, Tasmania  
Townsville, Australia

University of Graz:  
Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:  
Leopoldville, Belgian Congo

British Department of Scientific and Industrial Research, Radio  
Research Board:

Ibadan, Nigeria (University College of Ibadan)  
Port Lockroy  
Singapore, British Malaya  
Slough, England

Defence Research Board, Canada:  
Resolute Bay, Canada

Radio Wave Research Laboratories, National Taiwan University,  
Taicheng, Formosa, China:  
Formosa, China

Danish National Committee of URSI:  
Copenhagen, Greenland

French Ministry of National Defense (Section for Scientific Research):  
Djibouti, French Somaliland

National Laboratory of Radio-Electricity (French Ionospheric Bureau):  
Casablanca, Morocco  
Poitiers, France

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover,  
Germany:  
Lindau/Harz, Germany

The Royal Netherlands Meteorological Institute:  
De Bilt, Holland

Icelandic Post and Telegraph Administration:  
Reykjavik, Iceland

All India Radio (Government of India), New Delhi, India:  
Bombay, India  
Delhi, India  
Madras, India  
Tiruchy (Tiruchirapalli), India

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:  
Tokyo (Kokubunji), Japan  
Wakkanai, Japan  
Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of  
Scientific and Industrial Research:  
Christchurch, New Zealand  
Rarotonga, Cook Is.

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:  
Oslo, Norway

Manila Observatory:  
Baguio, P. I.

South African Council for Scientific and Industrial Research:  
Capetown, Union of South Africa  
Johannesburg, Union of South Africa

Research Institute of National Defence, Stockholm, Sweden:  
Upsala, Sweden

Royal Board of Swedish Telegraphs, Radio Department, Stockholm, Sweden:  
Lulea, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:  
Schwarzenburg, Switzerland

United States Army Signal Corps:  
Adak, Alaska  
White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):  
Fairbanks, Alaska (Geophysical Institute of the  
University of Alaska)  
Guam I.  
Huancayo, Peru (Instituto Geofisico de Huancayo)  
Maui, Hawaii  
Narsarssuak, Greenland  
Panama Canal Zone  
Point Barrow, Alaska  
Puerto Rico, W. I.  
San Francisco, California (Stanford University)  
Washington, D. C.

## HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 through 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

## IONOSPHERIC STORMINESS AT WASHINGTON, D.C.

Table 85 presents ionosphere character figures for Washington, D. C. during December 1954, as determined by the criteria given in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.



## RADIO PROPAGATION QUALITY FIGURES

Tables 87a and 87b give for November 1954 the radio propagation quality figures for the North Atlantic area, the relevant CRPL advance and short-term forecasts, a summary geomagnetic activity index and sundry comparisons, specifically as follows:

- (a) radio propagation quality figures,  $Q_a$ , separately for each 6-hour interval of the Greenwich day, viz., 00-06, 06-12, 12-18, 18-24 hours UT (Universal Time or GCT).
- (b) whole-day radio quality indices (beginning October 1952). Each index is a weighted average of the four quarter-day  $Q_a$ -figures, before rounding off, with half weight given to quality grades 5 and 6. This procedure tends to give whole-day indices suitable for comparison with whole-day advance forecasts which designate whenever possible the days when significant disturbance or unusually quiet conditions will occur.
- (c) short-term forecasts, issued by CRPL every six hours (nominally one hour before 00<sup>h</sup>, 06<sup>h</sup>, 12<sup>h</sup>, 18<sup>h</sup> UT) and applicable to the period 1 to 13 (especially 1 to 7) hours ahead. Note that new scoring rules have been adopted beginning with October 1952 data.
- (d) advance forecasts, issued semiweekly (CRPL-J reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole-day quality indices.
- (e) half-day averages of the geomagnetic K indices measured by the Cheltenham Magnetic Observatory of the U. S. Coast and Geodetic Survey.
- (f) illustration of the comparison of short-term forecasts with  $Q_a$ -figures and also with estimates of radio quality based on CRPL observations only.
- (g) illustration of the outcome of advance forecasts (1 to 3 or 4 days ahead) and, for comparison, the outcome of a type of "blind" forecast. For the latter the frequency for each quality grade, as determined from the distribution of quality grades in the four most recent months of the current season, is partitioned among the grades observed in the current month in proportion to the frequencies observed in the current month.

These radio propagation quality figures,  $Q_a$ , are prepared from radio traffic data reported to CRPL by American Telephone and Telegraph Company, Mackay Radio and Telegraph Company, RCA Communications, Inc., Marconi Company, British Admiralty Signal and Radar Establishment, and the following agencies of the U. S. Government:--Coast Guard, Navy, Army Signal Corps, and U. S. Information Agency. The method of calculation, summarized below, is similar to that described in a 1946 report, IRPL-R31, now out of print. Only reports of radio transmission on North Atlantic paths closely approximating New York-London are included in the estimation of quality.

The original reports are submitted on various scales and for various time intervals. The observations for each 6-hour interval are averaged on the quality scale of the original reports. These 6-hour indices are then adjusted to the 1 to 9 quality-figure scale by a conversion table prepared by comparing the distribution of these indices for at least four months, usually a year, with a master distribution determined from analysis of the reports originally made on the 1 to 9 quality-figure scale. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. The 6-hourly quality figures are (subjectively) weighted means of the reports received for that period. These 6-hourly quality figures replace, beginning January 1953, the half-daily quality figures which formerly appeared in this table. (These forecasts and quality indices are prepared by the North Atlantic Radio Warning Service, the CRPL forecasting center at Ft. Belvoir, Virginia.)

Table 86 gives for November 1954, the radio propagation quality figures for the North Pacific area, the relevant CRPL advance and short-term forecasts, and sundry comparisons, specifically as follows:

- (a) radio propagation quality figures,  $Q_p$ , separately for each of three 9-hour intervals of the Greenwich day, viz., 03-12, 09-18 and 18-03 UT (Universal Time or GCT).
- (b) whole-day radio quality indices for each Greenwich day. These are derived from the same basic data as the 9-hour indices, separately reduced.
- (c) short-term forecasts, issued daily at 02, 09 and 18 hours UT.
- (d) advance forecasts, issued semiweekly (CRPL-Jp reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole day quality indices.

These radio quality indices,  $Q_p$ , refer to radio propagation on optimum frequencies over moderately long transmission paths in the North Pacific area. Typical paths are Anchorage (Alaska) to Seattle, or Anchorage to Tokyo. The indices are derived from reports submitted regularly by communications agencies of the U. S. Army and Air Force, and by Aeronautical Radio, Inc. The method of derivation of  $Q_p$  differs from that of  $Q_a$ . For data prior to June 1954, the reported quality ratings were reduced to a Q-scale with assumed mean and standard deviation for each of the periods of the day; the  $Q_p$  published was the average converted rating for each date. Beginning with the data for June 1954 a ranking method has been used with the Q-scale bound statistically to magnetic character figures, as follows:

The original reports from the various contributors are used only to rank the days of the month in order of degree of disturbance. The numerical value of  $Q_p$  assigned to each day is taken from a table which gives the  $Q_p$  that corresponds in a statistical sense to the magnetic activity observed during the month, it being assumed that the one-month sample is large enough that the distribution of quiet and disturbance will be the same for magnetic and radio quality indices. This table comes from equating the expected distributions of magnetic activity indices and  $Q_p$  (for the former, the years 1952-53 of K-Cheltenham were used; for the latter the distribution was arbitrary but strongly influenced by experience with  $Q_a$  and the previous  $Q_p$ ). In order to avoid the statistic "average rank," the raw scores for each reporter-period are first converted to the 1-9 scale by ranking and the use of the same table. Mean quality indices for each day-period are then computed and these means ranked and converted by the table to give  $Q_p$ .

The expected distributions adopted for  $Q_p$  differ slightly for the different periods of the day for which quality figures are derived. For the 03-12, 18-03 and 00-24 periods 23% of the quality figures are 4 or less and for the 09-18 period 25% are. In the periods 18-03 and 00-24, indices of seven or greater are expected 25% of the time; in the 03-12 period 22% and in the 09-18 period 16%. (These forecasts and quality indices are prepared by the North Pacific Radio Warning Service, the CRPL forecasting center at Anchorage, Alaska.)

These quality figures are, in effect, a consensus of reported radio propagation conditions. The reasons for low quality are not necessarily known and may not be limited to ionospheric storminess. For instance, low quality may result from improper frequency usage for the path and time of day. Although, wherever it is reported, frequency usage is included in the rating of reports, it must often be an assumption that the reports refer to optimum working frequencies. It is more difficult to eliminate from the indices conditions of low quality because of multipath, interference, etc. These considerations should be taken into account in interpreting research correlations between the Q-figures and solar, auroral, geomagnetic or similar indices.

## OBSERVATIONS OF THE SOLAR CORONA

Tables 88 through 90 give the observations of the solar corona during December 1954, obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. Tables 91 through 93 list the coronal observations obtained at Sacramento Peak, New Mexico, during December 1954, derived by Harvard College Observatory as a part of its performance of a research contract with the Upper Air Research Observatory, Geophysical Research Directorate, Air Force Cambridge Research Center. The data are listed separately for east and west limbs at 5-degree intervals of position angle north and south of the Solar Equator at the limb. The time of observation is given to the nearest tenth of a day, GCT.

Table 88 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 89 gives similarly the intensities of the first red (6374A) coronal line; and table 90, the intensities of the second red (6702A) coronal line; all observed at Climax in December 1954.

Table 91 gives the intensities of the green (5303A) coronal line; table 92, the intensities of the first red (6374A) coronal line; and table 93, the intensities of the second red (6702A) coronal line; all observed at Sacramento Peak in December 1954.

The following symbols are used in tables 88 through 93: a, observation of low weight for whole limb (if in date column) or for portion of limb indicated; -, corona not visible; and X, no observation for whole limb (if in date column) or for portion of limb indicated.

Tables 94 and 95 give details of the Climax, Colorado, and Sacramento Peak, New Mexico, observations, respectively, from July through December 1954. The columns list in order the Greenwich date of observation; the threshold or lowest observable intensity of 5303A for each spectrum plate centered at the astronomical position angle indicated, the observer, and person responsible for the intensity estimates of the observation. These tables continue the presentation of coronal data in the manner of table 1 of CRPL-1-4 and appear in the F series regularly at intervals of six months.

## RELATIVE SUNSPOT NUMBERS

Table 96 lists the daily provisional Zürich relative sunspot number,  $R_z$ , for December 1954, as communicated by the Swiss Federal Observatory. Table 97 contains the daily American relative sunspot number,  $R_A$ , for November 1954, as compiled by the Solar Division, American Association of Variable Star Observers.

## OBSERVATIONS OF SOLAR FLARES

Table 98 gives the preliminary record of solar flares reported to the CRPL. These reports are communicated on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete records are published later in the Quarterly Bulletin of Solar Activity, I.A.U., in various observatory publications, and elsewhere. The present listing serves to identify and roughly describe the phenomena observed. Details should be sought from the reporting observatory.

Reporting directly to the CRPL are the following observatories: Mt. Wilson, McMath-Hulbert, U. S. Naval, Wendelstein, Kanzel and High Altitude at Sacramento Peak, New Mexico. The remainder report to Meudon (Paris) and the data are taken from the Paris-URSigram broadcast, monitored fairly regularly by the CRPL. The data on solar flares reported from Sacramento Peak, New Mexico, communicated by the High Altitude Observatory at Boulder, Colorado, are provided by Harvard University as the result of work undertaken on an Air Materiel Command Research and Development Contract administered by the Air Force Cambridge Research Laboratories.



The table lists for each flare the reporting observatory, date, times of beginning and ending of observation, duration (when known), total area (corrected for foreshortening), and heliographic coordinates. For the maximum phase of the flare is given the time, intensity, area relative to the total area, and the importance. The column "SID observed" is to indicate when a sudden ionosphere disturbance, noted elsewhere in these reports, occurred at the time of a flare. Times are in Universal Time (GCT).

## INDICES OF GEOMAGNETIC ACTIVITY

Table 99 lists various indices of geomagnetic activity based on data from magnetic observatories widely distributed throughout the world. The indices are: (1) preliminary international character-figures, C; (2) geomagnetic planetary three-hour-range indices, Kp; (3) magnetically selected quiet and disturbed days.

The C-figure is the arithmetic mean of the subjective classification by all observatories of each day's magnetic activity on a scale of 0 (quiet) to 2 (storm). The magnetically quiet and disturbed days are selected by the international scheme outlined on pages 219-227 in the December 1943 issue of Terrestrial Magnetism and Atmospheric Electricity. The details of the currently used method follow. For each day of a month, its geomagnetic activity is assigned by weighting equally the following three criteria: (1) the sum of the eight Kp's; (2) the greatest Kp; and (3) the sum of the square of the eight Kp's.

Kp is the mean standardized K-index from 11 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 (very quiet) to 9 (extremely disturbed), expressed in thirds of a unit, e.g., 5- is  $4 \frac{2}{3}$ , 5o is  $5 \frac{0}{3}$ , and 5+ is  $5 \frac{1}{3}$ . This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948," published in Washington, D. C., 1949, by the Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. Kp is available from 1937 to date as noted in F108.

The Committee on Characterization of Magnetic Disturbance, ATME, IUGG, has kindly supplied this table. The Meteorological Office, De Bilt, Holland, collects the data and compiles C and selected days. The Chairman of the Committee computes the planetary index. Current tables are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

## SUDDEN IONOSPHERE DISTURBANCES

Table 100 shows that no sudden ionosphere disturbances were observed at Ft. Belvoir, Virginia, during the month of December 1954.

## ERRATA

- CRPL-F124. p. 12, Index, Part I: opposite Leopoldville, under 1954, March, footnote reference symbol should be \*.  
 p. 13, Index, Part II: opposite Djibouti, under 1952, Jy, number of F issue should be 123.

## TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W)							
December 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	270	2.4					3.15
01	270	(2.7)					(3.2)
02	260	3.2					3.2
03	250	3.4					3.2
04	240	3.5					3.3
05	240	3.2					3.3
06	240	3.0				2.2	3.3
07	230	3.1					2.8
08	220	4.7	---	---	(120)	1.8	3.1
09	230	5.3	220	---	110	2.2	3.1
10	240	5.8	210	3.6	110	2.5	3.4
11	240	6.2	210	(3.8)	110	2.7	3.3
12	240	6.2	210	(3.8)	110	2.7	3.0
13	250	6.2	220	(3.7)	110	2.7	3.7
14	240	6.0	220	(3.6)	110	2.5	3.4
15	230	5.6	220	---	110	2.2	3.5
16	220	5.4	220	---	(120)	1.8	2.4
17	220	4.6					2.7
18	230	3.6					2.5
19	240	3.0					2.9
20	250	2.6					2.9
21	(260)	2.4					2.7
22	(280)	2.3					2.5
23	280	2.3					2.5

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Point Barrow, Alaska (71.3°N, 156.8°W)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	---					6.3
01	---	---					6.5
02	---	---					5.2
03	---	---					4.8
04	---	---					4.6
05	---	---					4.6
06	---	---					4.8
07	---	---					4.8
08	---	---					4.8
09	(290)	(2.9)					4.6
10	250	(3.5)					4.8
11	250	4.0	---	---	---	---	3.7
12	250	3.9	---	---			3.4
13	240	(4.1)					3.5
14	250	(4.2)					(2.5)
15	250	(4.0)					2.8
16	260	(3.1)					2.8
17	270	(2.6)					3.5
18	(280)	(1.8)					3.9
19	---	---					4.4
20	---	---					4.4
21	---	---					4.1
22							4.6
23							5.0

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 3

Fairbanks, Alaska (64.9°N, 147.8°W)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	(290)	(3.2)					5.0
01	(320)	(3.1)					5.0
02	(340)	(2.6)					5.8
03	---	(2.6)					5.2
04	(340)	(2.4)					4.7
05	320	(2.3)					4.0
06	300	(1.8)					4.4
07	310	(2.2)					2.9
08	270	2.9					2.3
09	250	3.7					2.1
10	240	4.4	240	---	---	---	2.0
11	240	4.5	220	---	---	---	2.0
12	230	4.6	220	---	---	(1.7)	1.6
13	230	4.6	210	---	---	---	2.2
14	230	4.7	---	---	---	---	1.6
15	220	4.1	---	---	---	---	2.0
16	230	3.5					1.4
17	240	2.4					1.7
18	260	2.0					3.1
19	300	(1.8)					2.4
20	(320)	(2.0)					3.5
21	(300)	(2.9)					4.1
22	(300)	(2.0)					4.5
23	(320)	(1.8)					4.0

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 4

Narsarsuaq, Greenland (61.2°N, 45.4°W)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	(2.1)					4.6
01	---	---					4.8
02	---	---					4.8
03	(310)	(2.2)					4.7
04	310	2.3					4.8
05	300	2.1					3.8
06	300	2.0					3.1
07	(280)	1.9					3.3
08	240	3.2			---	---	3.45
09	230	4.0	220	---	---	---	3.5
10	240	4.6	230	---	120	2.0	3.5
11	250	4.8	230	---	120	2.1	3.5
12	250	4.9	220	---	120	(2.0)	3.5
13	240	4.8	220	---	130	1.9	3.5
14	240	4.6	230	---	120	1.9	3.5
15	240	4.2			---	---	3.4
16	240	4.0					3.7
17	260	(3.6)					3.6
18	300	(3.0)					4.3
19	(320)	(3.2)					4.4
20	(330)	(2.9)					5.0
21	(330)	(2.4)					6.0
22	(280)	(3.0)					6.2
23	(270)	(2.9)					4.8

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 5

Adak, Alaska (51.7°N, 176.6°W)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	260	3.1					2.5
01	250	3.1					2.2
02	250	3.0					2.4
03	250	3.0					2.3
04	250	3.0					2.0
05	250	3.1					2.0
06	220	2.9					2.9
07	220	3.6					2.6
08	220	5.0	---	---	120	1.7	1.8
09	220	5.7	220	(3.3)	120	2.1	3.2
10	230	6.4	220	(3.5)	120	2.3	3.6
11	230	6.5	210	3.6	120	2.4	2.0
12	230	6.4	210	3.4	110	2.4	2.2
13	220	6.3	220	---	120	2.3	2.4
14	220	6.2	230	---	120	2.0	1.6
15	210	5.6			130	1.8	2.5
16	210	4.9			130	1.4	2.8
17	210	3.6			---	---	3.0
18	220	2.8					3.0
19	230	2.6					2.8
20	230	2.4					3.0
21	250	2.7					3.4
22	250	1.0					3.2
23	250	2.9					2.8

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 6

San Francisco, California (37.4°N, 122.2°W)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	(250)	(3.2)					(3.0)
01	260	(3.0)					(3.2)
02	260	(3.0)					(2.9)
03	260	(3.1)					(2.5)
04	(250)	(3.0)					(2.5)
05	(270)	3.2					(2.6)
06	(260)	(3.2)					(2.6)
07	240	(4.6)	---	---			(3.0)
08	240	5.9	230	---	(130)	(2.0)	(3.0)
09	250	6.2	220	(3.7)	(120)	(2.5)	3.5
10	260	6.4	220	(3.9)	120	(2.8)	3.6
11	260	6.7	230	(4.0)	(120)	(2.9)	3.6
12	260	6.9	240	(4.0)	(120)	2.9	3.6
13	270	6.9	230	(4.0)	(120)	(2.9)	3.8
14	260	6.4	240	(3.8)	(120)	(2.8)	3.9
15	250	6.3	230	(3.2)	(130)	(2.5)	3.8
16	240	5.8	---	---	---	---	3.5
17	220	5.0					3.6
18	(230)	(3.2)					3.4
19	240	(2.8)					2.7
20	250	(2.8)					3.6
21	(250)	(2.8)					3.6
22	(260)	(2.8)					3.3
23	(240)	(3.2)					(3.2)

Time: 120.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 7

White Sands, New Mexico (32.3°N, 106.5°W)							
November 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	240	3.3					2.4 3.3
01	230	3.3					2.6 3.3
02	220	3.4					2.1 3.3
03	230	3.4					3.3
04	220	3.2					3.4
05	240	3.2					3.2
06	240	3.1					3.3
07	220	5.0					(2.2) 3.6
08	220	6.2	200	---	120	(1.7)	(2.4) 3.7
09	230	6.6	200	(3.8)	110	2.6	3.6 3.7
10	230	6.4	200	(4.0)	110	2.8	3.9 3.65
11	240	6.7	200	(4.0)	110	2.9	3.8 3.6
12	240	6.9	200	(4.1)	110	3.0	4.0 3.55
13	240	7.0	200	(4.0)	110	2.9	3.8 3.5
14	240	6.8	210	(4.0)	110	2.8	3.8 3.5
15	230	6.4	210	---	110	(2.5)	4.1 3.65
16	220	5.8	---	---	110	2.1	3.5 3.6
17	200	5.4					2.8 3.65
18	200	5.5					2.4 3.6
19	210	5.0					3.2 3.5
20	(230)	2.9					3.3 3.4
21	230	2.8					3.2 3.4
22	240	3.2					3.0 3.25
23	240	3.3					2.8 3.3

Time: 105.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 8

Maui, Hawaii (20.8°N, 156.5°W)							
November 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	280	2.6					3.0
01	280	2.8					3.05
02	260	2.8					3.25
03	250	2.4					3.3
04	280	2.0					3.1
05	320	1.9					2.8
06	320	2.1					2.8
07	260	4.7					3.3
08	290	6.0	250	---	140	1.6	1.8 3.2
09	320	7.1	240	4.3	120	2.8	4.8 3.0
10	320	8.7	230	4.4	120	3.0	4.6 3.0
11	300	9.2	220	4.4	120	3.2	4.6 2.9
12	320	10.0	220	4.5	120	3.2	4.6 2.9
13	310	11.0	220	4.4	120	3.2	4.9 3.0
14	300	11.2	230	4.3	120	3.0	4.2 3.0
15	270	10.8	240	4.2	120	2.8	4.1 3.2
16	250	8.8	250	---	120	2.5	3.8 3.3
17	240	6.6	---	---	130	1.8	4.6 3.4
18	230	4.6					4.0 3.5
19	240	3.2					3.8 3.3
20	300	2.9					2.2 2.9
21	280	3.0					2.2 3.0
22	280	2.8					1.7 3.1
23	260	2.7					2.1 3.15

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9

Puerto Rico, W. I. (18.5°N, 67.2°W)							
November 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	260	3.9					3.1
01	240	4.0					3.2
02	240	4.2					3.3
03	220	4.0					3.45
04	230	3.3					3.3
05	240	3.0					2.0 3.2
06	250	2.8					3.1
07	230	4.8					3.5
08	240	5.9	230	---	110	2.3	3.5
09	260	6.8	220	---	110	2.8	2.2 3.5
10	260	7.5	220	4.2	110	3.0	3.4
11	250	7.6	220	4.3	110	3.1	3.5
12	270	6.8	210	4.4	110	3.2	2.6 3.45
13	270	6.8	210	4.3	110	3.2	3.1 3.45
14	270	6.6	220	4.2	110	3.1	3.4 3.4
15	250	6.7	220	4.0	110	2.9	3.2 3.5
16	240	6.5	230	---	110	2.5	3.9 3.5
17	230	6.3	230	---	120	2.0	3.3 3.5
18	210	5.2					2.8 3.55
19	220	4.2					2.6 3.4
20	240	3.2					3.2
21	270	3.4					3.0
22	270	3.8					2.2 3.1
23	260	3.8					3.05

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 10

Guam I. (13.6°N, 144.9°E)							
November 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	240	5.0					1.8 3.3
01	240	4.8					3.4
02	240	4.6					3.4
03	220	3.9					3.5
04	220	3.0					3.4
05	230	2.2					3.3
06	260	2.4					1.5 3.1
07	230	5.4	230	---	120	1.8	2.6 3.6
08	260	6.8	220	---	110	2.4	3.6 3.4
09	290	8.2	220	4.1	110	2.9	4.2 3.15
10	300	9.0	210	4.3	110	3.1	4.2 2.9
11	320	9.0	200	4.4	110	3.2	3.6 2.6
12	320	8.4	200	4.4	110	3.2	3.6 2.6
13	320	8.4	200	4.4	110	(3.2)	4.0 2.7
14	310	8.8	210	4.3	110	3.1	4.0 2.9
15	290	9.4	210	4.1	110	2.9	4.5 3.0
16	270	10.0	220	---	110	2.6	4.1 3.2
17	240	9.4	230	---	120	2.0	4.2 3.4
18	230	9.1					3.8 3.4
19	220	8.2					3.0 3.45
20	220	7.2					3.0 3.4
21	220	6.2					2.8 3.2
22	240	5.7					2.8 3.3
23	240	5.2					2.4 3.3

Time: 150.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 11

Panama Canal Zone (9.4°N, 79.9°W)							
November 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	250	3.2					1.8 3.25
01	240	2.8					3.45
02	240	2.5					2.4 3.4
03	240	2.4					3.2 3.3
04	260	2.2					2.9 3.0
05	300	2.4					3.2 2.9
06	280	3.0					4.2 3.1
07	250	5.6	250	---	130	2.0	4.0 3.4
08	280	6.8	240	(4.2)	120	2.6	4.0 3.3
09	230	8.1	230	4.4	110	3.0	4.3 3.3
10	270	8.6	220	4.4	110	3.2	4.6 3.3
11	250	8.4	220	4.5	110	3.3	4.2 3.2
12	280	8.2	230	4.5	110	3.4	4.8 3.3
13	290	7.4	220	4.5	110	3.3	4.8 3.2
14	290	7.4	230	4.4	110	3.2	5.3 3.2
15	290	7.4	230	4.4	110	3.0	5.0 3.2
16	270	7.3	240	(4.0)	110	2.6	5.4 3.3
17	250	7.4	240	---	120	---	4.4 3.4
18	230	6.4					3.8 3.5
19	230	4.3					3.0 3.4
20	230	3.5					2.8 3.4
21	250	2.7					2.0 3.1
22	290	2.9					3.0
23	250	3.1					3.2

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 12

Point Barrow, Alaska (71.3°N, 156.8°W)							
October 1954							
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs (M3000)F2
00	(290)	(2.4)					5.8 ---
01	(300)	(2.8)					6.4 (2.95)
02	(280)	(2.8)					5.6 (3.1)
03	(300)	(2.4)					4.8 (2.95)
04	(320)	(2.6)					3.6 (2.9)
05	(310)	(2.6)					4.6 ---
06	(370)	(2.6)					4.6 (2.9)
07	(320)	(2.7)					4.6 (3.1)
08	(290)	3.0	---	---	---	---	4.6 3.1
09	300	3.5	---	---	---	---	4.4 3.2
10	300	3.7	260	---	---	---	3.8 3.1
11	280	4.0	240	---	---	---	3.1 3.0
12	290	4.2	250	(3.2)	120	2.0	2.5 3.2
13	290	4.2	250	(3.2)	---	---	(2.2) 3.2
14	280	4.3	240	(3.2)	---	---	2.0 3.2
15	270	4.0	250	---	---	---	3.2
16	260	4.1	---	---	---	---	3.2
17	250	3.5	---	---	---	---	3.0 3.2
18	280	(3.4)	---	---	---	---	3.5 3.15
19	(300)	(2.9)					3.6 (3.1)
20	(280)	(2.2)					4.4 (3.15)
21	---	(2.4)					5.0 (3.1)
22	---	---					5.2 ---
23	---	---					6.6 ---

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 13  
Fairbanks, Alaska (64.9°N, 147.3°W) October 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	(340)	(2.4)					4.8	(2.8)
01	(320)	(2.0)					5.0	(2.95)
02	(380)	(2.3)					5.6	(2.7)
03	(400)	(2.6)					5.7	(2.6)
04	380	(2.3)					5.0	(2.7)
05	(340)	(2.4)					5.2	(2.8)
06	290	(2.1)					4.0	(3.0)
07	250	3.0					3.0	3.3
08	260	3.6	220	---	120	(1.8)	2.4	3.3
09	(280)	3.9	240	---	120	(2.0)	2.0	3.3
10	310	3.8	230	(3.5)	120	(2.2)	2.1	3.2
11	310	4.1	230	(3.5)	120	(2.2)	2.0	3.1
12	290	4.4	230	(3.5)	120	(2.3)	3.2	3.2
13	270	4.6	230	---	120	(2.2)	1.6	3.3
14	250	4.6	230	---	120	2.1	3.35	3.3
15	240	4.3	240	---	130	(1.8)	3.4	3.4
16	240	4.0	---	---	140	(1.4)	1.4	3.3
17	240	3.8	---	---			1.6	3.3
18	250	3.0					2.2	3.2
19	280	2.3					4.0	3.1
20	300	(2.0)					4.0	(3.0)
21	300	(1.8)					3.7	(3.0)
22	(300)	(2.0)					4.5	(3.1)
23	(300)	(2.2)					4.5	---

Time: 15.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 15  
Lindau/Harz, Germany (51.6°N, 10.1°E) September 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	<280	2.8					2.6	3.2
01	265	2.6					2.7	3.1
02	260	2.6					2.6	3.1
03	265	2.6			---	E	2.7	3.1
04	260	2.5			---	E	2.6	3.2
05	255	2.3			---	E	2.8	3.2
06	240	2.8	---	---	---	E	3.1	3.5
07	250	3.5	225	3.0	---	1.8	3.1	3.5
08	310	3.8	220	3.5	110	2.2	3.6	3.4
09	360	4.2	210	3.8	105	2.4	3.5	3.2
10	350	4.5	205	3.8	105	2.6	3.8	3.3
11	310	4.7	200	4.0	105	2.8	4.3	3.3
12	315	4.7	200	4.0	105	2.8	4.1	3.4
13	330	4.6	200	4.0	105	2.8	4.2	3.4
14	300	4.9	210	3.9	105	2.8	4.0	3.5
15	300	4.7	215	3.9	105	2.7	3.6	3.4
16	290	4.6	225	3.7	105	2.4	3.2	3.5
17	260	4.6	230	---	115	2.1	3.2	3.4
18	250	4.8	240	---	---	E	3.0	3.4
19	250	5.2			---	E	3.4	3.3
20	250	5.0			---	E	2.9	3.3
21	240	4.6					3.3	3.4
22	250	3.6					3.0	3.3
23	270	2.8					3.0	3.2

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 17  
Schwarzenburg, Switzerland (46.8°N, 7.3°E) September 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	270	3.0					3.3	3.3
01	300	2.9					3.2	3.2
02	290	2.9					3.2	3.2
03	280	2.8					3.3	3.3
04	260	2.7					3.3	3.3
05	260	2.4					3.3	3.3
06	215	2.6					3.6	3.6
07	200	3.5				1.8	3.8	3.8
08	300	3.9			3.5	2.2	3.5	3.5
09	300	4.4			3.7	2.5	3.35	3.35
10	300	4.6			3.9	2.8	3.3	3.3
11	300	5.0			4.0	2.9	3.5	3.5
12	300	5.0			4.0	3.0	3.5	3.5
13	300	5.0			4.1	3.0	3.6	3.6
14	300	4.9			4.0	2.9	3.5	3.5
15	300	5.0			4.0	2.8	3.5	3.5
16	250	4.8			3.8	2.6	3.5	3.5
17	230	5.0			3.4	2.3	3.5	3.5
18	210	5.0	---			1.8	3.6	3.6
19	210	5.4					3.5	3.5
20	220	5.0					3.4	3.4
21	210	4.8					3.6	3.6
22	215	3.9					3.5	3.5
23	240	3.1					3.4	3.4

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 14  
Reykjavik, Iceland (64.1°N, 21.8°W) September 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	---	---					4.5	---
01	---	---					5.1	---
02	---	---					4.7	---
03	---	---					4.4	---
04	---	---					5.0	---
05	---	---					3.0	---
06	---	---					---	---
07	---	(3.0)	240	---	---	---	---	(3.3)
08	---	---	---	---	---	---	---	---
09	(370)	(3.7)	220	3.4	---	---	---	(3.05)
10	(340)	(4.0)	210	3.5	---	---	---	(3.25)
11	400	4.2	230	3.6	---	---	---	3.0
12	360	4.2	220	3.6	---	---	---	3.1
13	410	4.2	220	3.6	---	---	---	2.95
14	400	4.1	230	3.5	---	---	---	3.0
15	400	4.0	220	3.5	---	---	---	3.0
16	350	4.0	240	3.3	---	---	---	3.0
17	320	3.9	250	---	---	---	---	3.25
18	290	3.6	260	---	---	---	---	3.2
19	280	3.2					3.8	(3.3)
20	---	---					4.0	---
21	---	---					4.3	---
22	---	---					5.0	---
23	---	---					4.6	---

Time: 15.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 16  
Graz, Austria (47.1°N, 15.5°E) September 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	290	3.1						
01	300	3.2						
02	295	3.0						
03	(300)	2.9						
04	(295)	2.7						
05	(300)	2.5						
06	250	3.3						
07	250	3.9	235	3.4				
08	250	4.5	210	3.8			2.8	
09	300	4.8	210	4.0			4.1	
10	285	5.1	205	4.0			3.6	
11	290	5.2	200	4.1			3.6	
12	290	5.1	200	4.1			3.3	
13	300	5.0	200	4.1				
14	290	5.0	200	4.0				
15	280	5.0	210	3.9				
16	260	5.0	240	3.9				
17	250	5.0		3.2				
18	250	5.2						
19	260	5.2						
20	260	5.0					2.8	
21	250	4.2						
22	265	3.9						
23	280	3.4						

Time: 15.0°E.

Sweep: 2.5 Mc to 12.0 Mc in 2 minutes.

Table 18  
Yamagawa, Japan (31.2°N, 130.6°E) September 1954

Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	310	3.3					2.4	
01	290	3.3					2.4	
02	280	3.2					2.4	
03	250	3.0					2.4	
04	260	2.6					2.4	
05	300	2.5					2.3	
06	260	3.4					2.4	
07	250	5.3					3.1	
08	250	5.5					3.5	
09	270	5.8					4.2	
10	290	5.5					4.6	
11	320	6.0					3.7	
12	310	6.4						
13	320	6.4						
14	310	6.8						
15	290	6.4						
16	300	6.1					3.4	
17	280	6.4					3.4	
18	250	7.2					3.2	
19	240	6.4					2.8	
20	270	4.8					3.0	
21	280	3.4					3.0	
22	300	3.3					2.9	
23	320	3.3					2.6	

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.



**Table 19**

Huancayo, Peru (12.0°S, 75.3°W)      September 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	5.8						3.35
01	230	5.5						3.25
02	240	4.6						3.4
03	250	3.8						3.4
04	260	3.2						3.3
05	280	2.8						(3.3)
06	250	3.5			130	1.3		3.2
07	(280)	6.0	230	---	110	2.3	6.8	3.3
08	320	6.8	220	4.0	110	---	10.7	3.0
09	340	7.0	200	4.2	100	---	11.5	2.7
10	360	6.8	200	4.3	100	---	12.2	2.6
11	390	6.4	200	4.3	100	---	12.3	2.6
12	400	6.4	200	4.4	100	---	12.2	2.6
13	370	6.6	200	4.3	100	---	12.2	2.6
14	370	6.9	190	4.2	100	---	11.4	2.6
15	340	7.0	190	4.1	100	---	11.2	2.6
16	(310)	7.0	190	---	110	---	9.4	2.7
17	(280)	7.0	230	---	110	---	7.1	2.75
18	270	7.0						2.9
19	280	6.8						2.9
20	270	6.6						3.0
21	240	6.6						3.2
22	230	6.5						3.3
23	230	6.2						3.4

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

**Table 20**

Buenos Aires, Argentina (34.5°S, 58.5°W)      September 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(3.0)						(3.1)
01	300	2.9						3.0
02	280	(3.2)						(3.1)
03	240	3.4						(3.5)
04	220	(2.8)					1.3	(3.5)
05	250	2.3						3.3
06	220	3.8					1.8	3.5
07	220	4.6	---	---	---	---	2.8	3.5
08	270	5.3	220	---	110	2.6	3.4	3.5
09	280	6.0	210	---	110	2.9	3.6	3.4
10	300	6.5	210	4.1	110	3.0	3.9	3.35
11	310	7.4	200	4.2	110	(3.1)	4.3	3.1
12	290	8.7	200	4.2	110	(3.2)	4.4	3.3
13	280	9.2	200	4.2	110	3.2	4.2	3.4
14	260	9.2	200	4.0	110	3.1	3.8	3.5
15	260	8.2	210	---	110	2.8	3.5	3.4
16	240	7.5	210	---			3.0	3.5
17	220	7.2	220	---			2.6	3.5
18	210	5.9						3.5
19	230	4.3						3.2
20	280	3.6						3.0
21	280	3.6						3.1
22	300	3.4						3.2
23	300	3.2						(3.0)

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

**Table 21**

Oslo, Norway (60.0°N, 11.1°E)      August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	2.4						3.1
01	270	2.2					2.8	3.0
02	270	1.8					2.6	3.0
03	280	1.8					2.6	3.0
04	275	2.2	---	---	---	---	2.6	3.1
05	260	2.8	235	---	115	1.4	1.9	3.3
06	(320)	3.4	215	3.2	100	1.9	3.0	(3.2)
07	420	3.8	210	3.5	100	2.1	3.3	2.85
08	450	4.0	205	3.7	100	2.4	3.7	2.85
09	390	4.3	205	3.8	100	2.6	3.9	3.0
10	370	4.5	205	3.9	100	2.7	4.0	3.05
11	350	4.6	210	4.0	100	2.8	3.9	3.15
12	350	4.6	200	4.1	100	2.8	3.9	3.15
13	350	4.6	200	4.0	100	(2.9)	4.1	3.15
14	350	4.5	200	4.0	100	2.8	3.6	3.1
15	365	4.4	210	4.0	100	2.7	3.0	3.1
16	360	4.4	210	3.9	100	2.6	3.5	3.1
17	325	4.4	225	3.7	100	2.4	3.6	3.15
18	310	4.5	230	3.6	110	2.0	3.6	3.15
19	260	4.6	230	---	115	1.8	3.6	3.2
20	250	4.8	---	---	125	1.5	2.0	3.2
21	230	4.5	---	---			2.4	3.25
22	240	4.0					3.1	3.15
23	250	3.1					2.5	3.15

Time: 15.0°E.

Sweep: 0.6 Mc to 14.0 Mc in 8 minutes, automatic operation.

**Table 22**

De Bilt, Holland (52.1°N, 5.2°E)      August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.0						3.0
01	<280	2.9						3.0
02	<280	2.8						3.0
03	<290	2.6					2.2	3.0
04	260	2.7					2.1	3.0
05	220	3.1	220	2.9	---	E	2.2	3.4
06	0	<3.7	210	3.4	100	2.0	3.0	2.9
07	400	4.2	200	3.7	100	2.4	3.7	3.0
08	360	4.6	200	3.9	100	2.6	4.0	3.0
09	330	4.8	200	4.0	100	2.8	3.5	3.4
10	310	5.0	200	4.1	100	3.0	3.7	3.4
11	310	5.0	200	4.2	100	3.0	3.7	3.3
12	320	4.8	200	4.2	100	3.0	3.8	3.5
13	340	4.8	200	4.2	100	3.0	3.2	3.25
14	350	4.7	200	4.0	100	3.0	3.3	3.25
15	360	4.8	210	4.0	100	2.8	3.4	3.1
16	330	4.6	210	3.9	100	2.6	3.3	3.3
17	310	4.7	210	3.5	100	2.3	3.4	3.4
18	280	4.9	220	3.1	100	1.9	3.2	3.4
19	240	5.4					3.2	3.4
20	230	(5.3)					3.0	(3.5)
21	220	4.5					3.4	3.5
22	230	3.8					1.9	3.4
23	250	3.3						3.2

Time: 0.0°.

Sweep: 1.4 Mc to 11.2 Mc in 6 minutes, automatic operation.

**Table 23**

Graz, Austria (47.1°N, 15.5°E)      August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	3.5					3.4	
01	300	3.3					3.2	
02	285	3.1					3.0	
03	---	2.9						
04	---	2.9						
05	275	3.0						
06	250	3.7					3.3	
07	300	4.1	220	3.6			4.2	
08	290	5.0	210	3.8			3.9	
09	290	5.2	210	4.0	---	2.8	4.0	
10	295	5.3	200	4.1			3.9	
11	295	5.2	200	4.2			3.8	
12	310	5.2	200	4.2			3.6	
13	300	5.0	200	4.2			3.4	
14	300	5.2	210	4.1			3.7	
15	330	4.9	200	4.0	---	3.0	3.2	
16	325	4.8	205	3.9	---	2.8	3.3	
17	300	4.9	225	3.7				
18	275	5.0					3.7	
19	260	5.7			(2.3)		3.2	
20	250	6.1					3.6	
21	240	5.6					3.7	
22	240	4.5					3.5	
23	250	3.9					3.4	

Time: 15.0°E.

Sweep: 2.5 Mc to 12.0 Mc in 2 minutes.

**Table 24**

Schwarzenburg, Switzerland (46.8°N, 7.3°E)      August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.2						3.4
01	300	3.1						3.3
02	280	3.0						3.3
03	280	2.9						3.3
04	280	2.8						3.3
05	260	2.8						3.4
06	210	3.2	---	---	---	---		3.5
07	200	4.0	200	3.4	100	2.1		3.7
08	300	4.4	200	3.7	100	2.5		3.5
09	300	4.6	200	3.8	100	2.7	5.0	3.45
10	300	5.0	200	4.0	100	3.0	5.2	3.4
11	300	5.0	200	4.1	100	3.0	4.6	3.5
12	300	5.1	200	4.2	100	3.0	4.9	3.4
13	310	4.9	200	4.2	100	3.0	4.7	3.3
14	340	4.8	200	4.1	100	3.0		3.35
15	320	4.6	200	4.0	100	2.9		3.3
16	320	4.8	200	3.9	100	2.8		3.3
17	300	4.8	200	3.8	100	2.6		3.4
18	300	4.8	200	3.5	100	2.2		3.4
19	260	5.2	---	---	100	2.0		3.4
20	220	6.0	---	---				3.5
21	200	6.0						3.6
22	200	4.9						3.6
23	200	3.9						3.4

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 25

Wakkanai, Japan (45.4°N, 141.7°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.5					4.5	
01	290	3.4					4.2	
02	280	3.3					3.5	
03	270	3.3					3.8	
04	280	(3.3)					3.5	
05	260	3.6					3.4	
06	300	4.2					4.0	
07	330	4.5					5.0	
08	340	4.7					6.0	
09	300	5.2					5.9	
10	330	5.0					6.1	
11	390	4.8					5.9	
12	390	4.7					4.8	
13	400	4.8					4.7	
14	360	4.8					5.2	
15	380	4.7					4.4	
16	350	4.6					4.2	
17	320	4.7					5.4	
18	300	4.8					5.3	
19	270	5.5					5.6	
20	280	5.3					4.3	
21	260	5.3					4.4	
22	260	4.5					4.5	
23	270	3.6					4.5	

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 27

Yamagawa, Japan (31.2°N, 130.6°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.4					5.6	
01	300	3.2					5.7	
02	290	3.2					3.6	
03	290	3.1					3.3	
04	290	2.9					3.5	
05	280	2.8					3.3	
06	250	3.6					3.0	
07	260	5.3					3.7	
08	250	5.7					5.2	
09	300	5.2					5.4	
10	340	5.0					5.9	
11	350	5.4					5.9	
12	380	5.2					5.7	
13	390	5.3					5.5	
14	360	5.9					5.3	
15	340	6.2					4.8	
16	310	6.3					4.8	
17	300	6.3					4.9	
18	290	6.0					4.0	
19	250	6.4					3.9	
20	250	6.1					4.3	
21	250	4.9					4.2	
22	290	3.9					5.7	
23	300	3.6					4.2	

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 29

Baguio, P. I. (16.4°N, 120.6°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	(2.7)					5.8	(2.7)
01	300	(2.4)					4.0	(2.8)
02	250	2.8					5.0	3.1
03	240	2.6					4.0	3.3
04	230	2.3					4.1	3.4
05	240	2.1					5.0	3.4
06	240	3.9					4.7	3.5
07	220	5.3			110	2.3	6.4	3.4
08	300	5.8	200	---	110	2.7	7.0	3.1
09	350	6.5	200	4.1	---	---	7.7	2.8
10	400	7.1	200	4.1	110	---	8.4	2.6
11	430	7.3	200	4.2	110	3.2	8.1	2.5
12	420	7.7	200	4.2	110	(3.4)	8.4	2.5
13	410	7.9	190	4.1	110	3.3	7.4	2.5
14	400	8.2	200	4.1	110	3.3	7.2	2.7
15	370	8.4	210	4.0	110	3.0	6.8	2.8
16	340	8.6	220	3.8	110	2.7	5.4	2.9
17	280	9.6	220	---	110	2.2	6.0	3.1
18	240	9.6					4.2	3.2
19	220	9.0					4.0	3.4
20	220	6.1					3.7	3.4
21	260	4.4					3.7	3.0
22	300	4.0					4.0	3.0
23	320	3.1					4.2	2.8

Time: 120.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 26

Tokyo, Japan (35.7°N, 139.5°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.3					4.5	3.0
01	290	3.2					3.9	3.0
02	300	3.2					4.5	3.0
03	270	3.3					4.2	3.0
04	260	3.1					3.2	3.05
05	260	3.2	---	---	---	---	3.2	3.1
06	280	4.2	240	3.4	120	2.0	4.1	3.1
07	280	5.1	220	3.7	110	2.4	5.0	3.2
08	280	5.5	220	4.0	110	2.5	6.5	3.3
09	300	5.4	210	4.1	110	2.9	6.5	3.3
10	320	5.0	200	4.2	110	3.0	6.5	3.2
11	350	5.1	210	4.3	110	3.2	5.7	3.0
12	380	5.1	210	4.3	110	3.1	5.0	3.0
13	360	5.3	220	4.2	110	3.2	5.3	3.0
14	340	5.5	230	4.2	110	3.1	5.5	3.0
15	330	5.3	230	4.0	110	3.0	4.6	3.1
16	300	5.6	240	3.9	110	2.7	5.4	3.2
17	300	5.5	240	3.5	120	2.3	5.1	3.1
18	280	5.7	250	---	---	---	5.4	3.1
19	250	6.0					4.5	3.1
20	250	5.7					5.0	3.1
21	240	4.9					5.2	3.1
22	280	4.3					5.0	3.0
23	270	4.0					4.5	3.0

Time: 135.0°E.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 28

Formosa, China (25.0°N, 121.5°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.5					3.6	2.95
01	280	4.1					5.5	3.2
02	280	4.5					5.2	3.2
03	260	4.4					4.6	3.3
04	260	3.7					3.6	3.2
05	240	3.2					2.9	3.5
06	220	4.2					3.0	3.5
07	240	5.3	210	3.5	110	2.3	4.0	3.7
08	280	5.6	210	3.9	110	2.8	5.8	3.4
09	290	5.2	210	4.2	110	3.1	6.2	3.4
10	320	5.6	210	4.3	110	3.3	6.4	3.15
11	340	6.6	---	---	100	---	6.0	2.95
12	360	6.8	---	---	100	---	5.4	2.8
13	350	7.6	---	---	100	3.4	5.6	2.95
14	320	8.2	---	---	100	3.2	5.0	3.0
15	310	9.0	---	---	110	3.1	5.8	3.1
16	280	8.2	230	4.0	110	---	4.7	3.15
17	280	8.1	230	3.8	---	---	4.3	3.3
18	240	8.2	240	(3.6)			4.8	3.4
19	200	7.6					4.1	3.5
20	200	5.8					3.2	3.4
21	260	4.2					3.3	3.3
22	310	3.2					3.1	3.0
23	320	3.3					2.8	2.95

Time: 120.0°E.

Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 30

Leopoldville, Belgian Congo (4.3°S, 15.3°E) August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	215	2.9						2.7
01	(245)	---						---
02	(260)	(3.0)					1.6	(2.55)
03	---	(2.2)					2.4	(2.4)
04	(255)	2.2					2.6	(2.7)
05	240	3.1					2.3	2.7
06	250	5.2	230	---	120	2.1	3.0	2.9
07	275	5.0	230	4.0	110	2.7	3.2	2.7
08	280	6.6	220	4.1	110	3.0	3.2	2.7
09	290	7.0	---	4.2	110	3.2		< 2.7
10	290	7.2	---	4.2	110	3.2		2.6
11	290	7.8	---	4.3	110	3.3	3.2	2.55
12	300	8.6	---	4.4	110	3.3		2.4
13	310	7.8	---	4.2	110	3.2	3.2	2.4
14	295	8.0	---	4.1	110	3.0	3.0	2.3
15	295	8.5	230	4.0	110	2.6	3.2	2.4
16	275	3.4	240	---	120	2.1	3.0	2.4
17	240	7.8					3.0	2.5
18	240	7.5					3.1	2.6
19	225	6.6					2.8	2.8
20	210	5.2					2.6	2.9
21	210	3.2					2.2	2.9
22	230	3.2					1.6	2.5
23	230	3.0						2.7

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 31

Huancayo, Peru (12.0°S, 75.3°W)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	220	4.4						3.4
01	230	4.1						3.4
02	230	4.1						3.4
03	240	3.4						3.4
04	240	2.9						3.4
05	270	2.2						3.2
06	270	2.2						3.0
07	(290)	4.7	220	---	110	2.0	5.8	3.3
08	(330)	5.7	210	3.8	110	2.6	9.1	3.0
09	350	6.0	200	4.1	110	---	10.8	2.8
10	390	6.0	190	4.1	110	---	11.3	2.65
11	410	5.8	190	4.2	110	---	11.4	2.6
12	420	5.8	190	4.2	110	---	11.5	2.6
13	400	5.9	180	4.2	110	---	11.4	2.6
14	400	6.0	180	4.1	110	---	11.4	2.6
15	380	6.0	180	4.0	110	---	10.2	2.6
16	(310)	6.2	180	---	110	---	9.2	2.7
17	(280)	6.4	210	---	110	2.1	5.8	2.8
18	250	6.5			100	---	4.5	3.0
19	260	5.9						3.0
20	270	5.5						3.1
21	240	5.3						3.2
22	220	5.4						3.4
23	220	4.9						3.4

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 32

Johannesburg, Union of S. Africa (26.2°S, 28.1°E)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	220	2.9						3.3
01	230	2.7						3.2
02	230	2.7						3.3
03	230	2.8						3.3
04	220	2.5					3.8	3.25
05	220	2.5						3.2
06	<240	2.6						3.2
07	220	4.0	---	---	120	1.9		3.6
08	240	4.7	220	3.3	120	2.3		3.6
09	280	4.9	220	3.9	110	2.7		3.4
10	300	5.2	220	4.1	110	3.0		3.3
11	300	5.4	210	4.2	110	3.1		3.3
12	300	5.6	210	4.2	110	3.1		3.3
13	300	5.8	210	4.2	110	3.1	3.8	3.3
14	280	5.7	200	4.1	110	3.0	3.9	3.3
15	270	5.8	200	3.9	110	2.8	3.4	3.4
16	250	5.3	210	3.5	110	2.5	3.1	3.5
17	230	5.0	220	2.7	120	2.1		3.5
18	220	4.6					2.1	3.4
19	220	3.7					1.9	3.4
20	<230	3.0						3.4
21	<240	3.1						3.3
22	240	3.1						3.3
23	230	3.0						3.3

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 33

Capetown, Union of S. Africa (34.2°S, 18.3°E)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	<250	2.7						3.2
01	250	2.7						3.1
02	250	2.7						3.1
03	250	2.7						3.1
04	240	2.8						3.2
05	<240	2.7						3.2
06	<240	2.7						3.2
07	<240	2.9						3.3
08	230	4.1	210	2.4	130	1.7		3.6
09	240	4.7	230	3.4	120	2.3		3.5
10	270	4.9	220	3.8	120	2.7		3.4
11	310	5.0	220	4.0	120	2.9		3.3
12	320	5.1	220	4.1	110	3.0		3.3
13	310	5.4	220	4.1	110	3.0		3.2
14	290	5.7	220	4.1	110	3.0		3.3
15	280	5.8	220	4.0	110	2.8	3.6	3.3
16	270	5.7	220	3.6	120	2.6	3.3	3.4
17	240	5.0	220	3.0	120	2.2	2.7	3.5
18	230	4.9	---	---	---	1.8		3.5
19	220	3.7					1.7	3.5
20	230	2.8					1.9	3.3
21	240	2.9						3.3
22	<240	2.9						3.3
23	<240	2.8						3.3

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 34

Buenos Aires, Argentina (34.5°S, 58.5°W)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	300	2.3						3.1
01	300	(2.4)						(3.1)
02	280	(2.5)						(3.3)
03	240	2.4						3.4
04	220	2.4						3.5
05	260	1.9						3.4
06	250	2.3						3.4
07	220	3.9						3.6
08	230	4.4	200	---	---	---	3.0	3.6
09	250	4.5	210	---	110	2.7	3.6	3.5
10	300	5.1	210	3.9	110	2.8	3.8	3.4
11	290	5.7	200	4.0	110	3.0	3.8	3.4
12	280	6.4	200	4.0	110	3.0	4.2	3.45
13	280	7.2	200	4.0	110	3.0	4.1	3.45
14	260	6.5	200	3.9	110	2.7	4.2	3.5
15	240	6.4	200	---	110	2.7	3.4	3.5
16	220	5.9	210	---			3.0	3.5
17	220	5.0						3.6
18	210	4.2						3.5
19	220	3.5						3.5
20	270	3.0						3.4
21	280	2.9						3.4
22	280	2.6						(3.3)
23	300	2.4						(3.25)

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 35

Christchurch, New Zealand (43.6°S, 172.8°E)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	(280)	2.5						3.2
01	280	2.5						3.1
02	280	2.4					2.5	3.1
03	280	2.3					2.4	3.15
04	250	2.2					2.7	3.3
05	250	1.8					2.4	3.3
06	270	1.8					2.3	3.2
07	250	2.8				(1.3)		3.45
08	240	3.8	230	2.8			2.1	3.5
09	260	4.2	220	3.3		2.2		3.5
10	290	4.3	220	3.7		2.4		3.4
11	300	4.6	230	3.8		2.6		3.4
12	310	4.8	220	3.8		2.7		3.3
13	300	5.0	220	3.8		2.7		3.3
14	280	4.9	230	3.8		2.5		3.4
15	280	4.8	220	3.5		2.3		3.4
16	260	4.7	230	3.2		1.8		3.4
17	240	4.2	240	2.3		1.4		3.5
18	250	3.3						3.1
19	270	3.0						3.1
20	270	2.8						3.1
21	280	2.6						3.1
22	(280)	2.5						3.1
23	280	2.4						3.1

Time: 172.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 36

Deception I. (63.0°S, 60.7°W)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	300	2.4						3.1
01	300	2.5						3.1
02	300	2.5						(3.1)
03	300	2.4						(3.1)
04	290	2.5						(3.2)
05	280	2.5						(3.2)
06	290	2.8						(3.2)
07	260	3.1						(3.3)
08	220	3.3						(3.4)
09	230	3.8					2.8	(3.5)
10	220	4.1					3.5	(3.55)
11	230	4.2					4.0	(3.5)
12	220	4.1					4.0	(3.55)
13	220	4.3					3.8	(3.5)
14	220	4.0					3.3	(3.55)
15	220	3.8					2.6	(3.5)
16	220	3.6					1.8	(3.5)
17	240	3.2					2.0	(3.4)
18	230	3.2					2.0	(3.4)
19	240	2.8						(3.4)
20	250	2.3						(3.4)
21	270	2.4						(3.3)
22	300	2.3						3.2
23	300	2.4						(3.15)

Time: 60.0°W.

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 37

Resolute Bay, Canada (74.7°N, 94.9°W)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	270	3.8	220	---	120	1.8		3.3
01	270	3.8	220	---	120	1.8		3.3
02	280	3.8	220	2.9	110	1.9		3.3
03	290	3.8	220	3.0	110	1.9		3.3
04	310	3.8	220	3.2	110	2.0		3.2
05	320	3.8	220	3.2	110	2.1		3.2
06	360	3.9	210	3.3	100	2.2		3.1
07	380	4.0	210	3.4	100	2.4		3.1
08	380	4.1	210	3.6	110	2.7		3.0
09	400	4.0	210	3.6	100	2.8		3.0
10	420	4.1	200	3.7	100	2.8		3.0
11	390	4.2	210	3.8	100	2.9		3.0
12	400	4.2	200	3.8	100	2.9		3.0
13	380	4.2	200	3.8	100	2.8		3.0
14	400	4.1	200	3.8	100	2.8		2.9
15	410	4.1	200	3.7	100	2.8		2.8
16	390	4.1	200	3.7	110	2.7		3.0
17	390	4.1	210	3.5	100	2.6		3.0
18	360	4.1	210	3.4	110	2.3		3.0
19	360	4.0	210	3.3	110	2.2		3.05
20	310	4.0	220	3.2	110	2.1		3.1
21	300	4.0	220	3.1	110	2.0		3.2
22	280	3.9	220	3.0	120	1.9		3.3
23	270	3.8	230	---	120	1.9		3.2

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 38

Godhavn, Greenland (69.2°N, 53.5°W)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00		(3.4)					(1.4)	(3.2)
01		(3.5)					(1.4)	(3.3)
02		(3.5)						(3.2)
03		(3.6)					1.9	(3.2)
04		(3.5)						(3.2)
05		(3.5)					3.5	(3.15)
06		(3.7)					4.0	(3.4)
07		(3.8)					4.0	0
08		(4.0)					3.8	(2.85)
09		(4.2)					(2.8)	(3.0)
10		(4.3)					3.9	(3.0)
11		(4.4)					3.5	(2.95)
12		(4.4)					3.7	(2.9)
13		(4.5)					3.6	(2.9)
14		(4.6)					4.2	(3.0)
15		(4.4)					6.5	(3.0)
16		(4.5)					6.6	(3.2)
17		(4.3)					5.8	(3.0)
18		(4.2)					8.0	(3.0)
19		(4.2)					>6.4	(3.1)
20		(4.0)					5.6	(3.25)
21		3.8					3.9	3.2
22		(3.7)					3.5	(3.3)
23		3.6					2.0	3.2

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 19 seconds.

Table 39

Uppsala, Sweden (59.8°N, 17.6°E)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	260	3.1					2.3	3.05
01	265	2.8					2.3	3.0
02	265	2.6					2.3	3.0
03	260	2.9	---	---	---	E	2.3	3.1
04	260	3.4	240	2.8	150	1.6	3.3	3.0
05	365	3.8	220	3.2	120	1.9	3.4	2.95
06	400	4.0	220	3.4	115	2.2	3.5	2.9
07	380	4.2	215	3.7	110	2.4	4.2	2.9
08	410	4.1	205	3.8	110	2.6	4.4	2.9
09	375	4.4	205	3.9	105	2.7	5.3	3.0
10	370	4.5	200	4.0	105	2.8	4.5	2.9
11	400	4.5	205	4.0	105	2.9	5.2	3.0
12	390	4.6	205	4.1	105	3.0	5.2	2.95
13	400	4.5	200	4.1	105	2.9	4.9	3.0
14	390	4.4	205	4.0	105	2.8	4.2	3.0
15	370	4.5	210	4.0	105	2.8	5.2	3.0
16	380	4.3	205	3.9	110	2.6	3.7	2.95
17	350	4.2	220	3.7	110	2.4	4.3	3.1
18	325	4.4	230	3.5	115	2.2	4.3	3.1
19	230	4.5	235	3.1	125	1.8	4.0	3.2
20	260	4.5	240	---	---	E	3.6	3.2
21	240	4.6				E	2.6	3.2
22	240	4.3					2.4	3.2
23	240	3.7					2.1	3.2

Time: 15.0°E.

Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 40\*

Slough, England (51.5°N, 0.6°W)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	265	3.6					2.8	3.0
01	270	3.2					3.3	3.0
02	280	3.1					3.2	2.95
03	275	2.9					3.2	2.9
04	285	3.0	(255)	(2.2)			3.6	3.0
05	330	3.6	240	3.0	120	1.7	3.6	3.05
06	390	4.1	235	3.4	120	2.1	4.8	3.0
07	385	4.2	230	3.7	115	2.4	4.8	3.0
08	415	4.4	230	3.9	115	2.7	4.9	3.05
09	380	4.7	215	4.0	115	2.9	5.0	3.15
10	385	4.8	220	4.1	115	3.0	5.0	3.15
11	385	4.8	210	4.2	115	3.1	5.0	3.1
12	435	4.6	220	4.2	115	3.1	4.8	3.0
13	410	4.7	220	4.2	115	3.1	4.8	3.15
14	395	4.7	215	4.1	115	3.0	4.9	3.05
15	405	4.6	220	4.1	115	3.0	4.7	3.0
16	400	4.6	230	4.0	115	2.8	4.9	3.0
17	345	4.6	230	3.8	115	2.6	4.7	3.0
18	325	4.8	235	3.5	120	2.2	5.0	2.95
19	230	5.2	245	3.1	125	1.8	4.8	3.15
20	250	5.4					3.7	3.2
21	245	5.2					3.5	3.2
22	245	4.6					2.8	3.1
23	255	4.0					3.1	3.0

Time: 0.0°.

Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

\*Average values except foF2 and fEs, which are median values.

Table 41

Leopoldville, Belgian Congo (4.3°S, 15.3°E)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M2000)F2
00	(220)	---					3.1	---
01	---	---					3.0	---
02	---	---					3.0	---
03	---	---					3.0	---
04	---	---					3.0	---
05	250	2.7					2.0	2.6
06	245	4.8	240	---	120	2.0	3.0	2.8
07	280	5.4	230	4.0	110	2.6	3.8	2.7
08	290	5.8	220	4.0	110	3.0	4.4	2.6
09	290	6.0	210	4.1	110	3.1	4.0	2.6
10	310	6.2	200	4.2	110	3.2	3.7	2.5
11	300	7.7	210	4.2	110	3.3	3.6	2.45
12	290	7.6	200	4.2	110	3.2	4.0	2.45
13	320	8.5	210	4.1	110	3.1	3.8	2.3
14	300	8.3	240	4.0	110	3.0	4.6	2.3
15	280	8.0	240	3.8	110	2.6	3.5	2.5
16	250	7.1	230	---	120	2.0	3.3	2.5
17	240	7.0					2.5	
18	230	7.0					4.0	2.75
19	220	5.4					3.0	2.9
20	210	3.4					3.0	3.0
21	(225)	2.4					2.9	2.7
22	(230)	2.4					2.9	2.5
23	250	2.6					3.0	2.55

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 42

Rarotonga I. (21.3°S, 159.8°W)								July 1954
Time	h <sup>1</sup> F2	foF2	h <sup>1</sup> F1	foF1	h <sup>1</sup> E	foE	fEs	(M3000)F2
00	270	2.9						3.2
01	290	2.7						3.0
02	280	2.7						3.1
03	270	2.8						3.35
04	250	2.6						3.4
05	260	2.5					2.0	3.3
06	270	2.5						3.2
07	210	3.6	240	---	---	E		3.5
08	250	4.9	220	3.4	120	2.0	2.8	3.6
09	280	4.9	210	3.8	110	2.5	3.1	3.5
10	280	5.6	210	4.0	110	2.8	3.4	3.5
11	270	5.4	200	4.1	105	3.0	3.7	3.6
12	280	5.2	200	4.1	105	3.0	3.9	3.5
13	260	5.1	200	4.1	105	3.0	4.2	3.45
14	300	5.3	210	4.0	105	2.9	4.2	3.4
15	270	5.3	200	3.9	110	2.8	4.1	3.4
16	260	5.1	220	3.6	115	2.5	3.8	3.5
17	250	5.1	240	3.0	---	2.0	3.7	3.5
18	240	5.2					3.7	3.5
19	220	4.3					3.0	2.55
20	230	3.2					2.8	3.3
21	260	3.0					2.4	3.1
22	270	3.0					2.3	3.2
23	260	2.9					2.3	3.2

Time: 157.50W.

Sweep: 1.5 Mc to 20.0 Mc in 5 minutes, manual operation.



Table 43

Capetown, Union of S. Africa (34.2°S, 18.3°E)								July 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	2.4						3.3
01	<250	2.4						3.2
02	250	2.5						3.2
03	<250	2.4						3.2
04	<250	2.4						3.2
05	230	2.4						3.3
06	<230	2.1						3.3
07	<230	2.0					2.6	3.2
08	220	3.5	---	---				3.6
09	230	4.2	220	2.8	130	2.1		3.6
10	260	4.5	240	3.6	120	2.5		3.5
11	280	4.6	230	3.8	120	2.7		3.45
12	300	4.8	230	4.0	120	2.9		3.3
13	320	4.8	220	4.0	110	2.9		3.2
14	290	5.1	220	3.9	120	2.8	3.8	3.3
15	280	5.2	220	3.7	120	2.7	3.7	3.3
16	260	5.2	220	3.5	120	2.3	3.4	3.4
17	240	4.7	230	2.6	120	2.0	2.6	3.4
18	220	3.9					2.2	3.55
19	220	2.6					2.7	3.5
20	<230	2.4					2.9	3.2
21	<230	2.4						3.35
22	230	2.5						3.4
23	230	2.4						3.3

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 44

Godhavn, Greenland (69.2°N, 53.5°W)								June 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(3.9)						(3.3)
01		(3.9)						(3.3)
02		(3.9)						(3.3)
03		(4.0)						(3.2)
04		(4.0)					3.2	(3.3)
05		(4.0)					3.6	(3.3)
06		(4.1)					4.0	(3.4)
07		(4.4)					3.8	(3.2)
08		(4.5)					3.8	(3.2)
09		(4.4)					3.3	(3.1)
10		(4.4)					4.2	(2.9)
11		(4.5)					4.3	(3.0)
12		(4.6)					3.6	(3.0)
13		(4.5)					3.4	(3.0)
14		(4.6)					5.4	(3.0)
15		(4.6)					5.0	(3.1)
16		(4.5)					4.8	(3.2)
17		(4.5)					4.8	(3.1)
18		(4.4)					5.0	(3.1)
19		(4.3)					4.1	(3.2)
20		(4.0)					3.6	3.2
21		(3.9)					3.3	(3.2)
22		3.8					3.0	3.2
23		(3.7)					2.0	3.3

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 45

Oslo, Norway (60.0°N, 11.1°E)								June 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	4.2						3.1
01	245	3.7						3.1
02	245	3.4					2.6	3.1
03	250	3.4	250	---	---	---	1.4	3.1
04	300	3.7	240	2.8	130	1.5	2.7	3.1
05	330	4.1	230	3.2	110	1.9	3.0	3.05
06	350	4.2	220	3.4	105	2.2	3.7	3.05
07	375	4.3	210	3.6	100	2.4	3.9	3.05
08	355	4.4	210	3.8	100	2.6	4.2	3.05
09	355	4.6	210	3.9	100	2.7	4.2	3.05
10	370	4.6	205	4.0	100	2.8	4.2	3.05
11	365	4.6	210	4.0	100	2.8	4.4	3.1
12	390	4.6	200	4.1	100	2.9	4.2	3.05
13	390	4.5	200	4.1	100	2.8	4.3	3.0
14	380	4.5	200	4.0	100	2.8	4.0	3.0
15	385	4.4	205	4.0	100	2.8	3.7	3.0
16	390	4.4	200	3.9	100	2.7	3.7	3.0
17	370	4.4	210	3.8	105	2.6	3.8	3.05
18	325	4.5	225	3.6	105	2.4	4.2	3.1
19	300	4.6	230	3.4	110	2.0	4.0	3.2
20	275	4.6	240	---	---	---	3.6	3.2
21	250	4.6	250	---	---	---	3.0	3.2
22	245	4.7					2.8	3.2
23	240	4.6					2.7	3.15

Time: 15.0°E.

Sweep: 0.6 Mc to 14.0 Mc in 8 minutes, automatic operation.

Table 46\*

Singapore, British Malaya (1.3°N, 103.8°E)								June 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	(2.3)					3.4	---
01	265	2.3					3.2	---
02	255	(1.8)					3.1	---
03	255	(1.6)					3.0	---
04	255	(1.4)					3.0	---
05	---	(1.2)					3.1	---
06	245	2.9			(165)	1.2	3.0	3.3
07	255	5.1	235		120	2.2	3.6	3.1
08	310	6.4	220	3.9	115	2.7	5.6	2.9
09	330	7.5	210	4.1	110	3.0	6.0	2.8
10	330	8.6	205	4.3	110	3.1	11.1	2.8
11	330	8.2	205	4.3	110	3.3	10.6	2.8
12	345	8.2	200	4.3	110	3.3	6.6	2.7
13	345	8.2	200	4.3	110	3.3	6.0	2.7
14	325	8.1	200	4.2	110	3.2	6.3	2.8
15	315	8.1	205	4.1	115	3.0	5.2	2.8
16	290	8.1	225	3.9	115	2.6	4.6	3.0
17	255	7.9	230	3.5	120	2.2	5.6	3.2
18	230	6.8			(140)	1.7	3.2	3.4
19	230	5.8					4.2	3.3
20	225	4.6					3.6	3.4
21	230	3.0					3.8	(3.6)
22	230	2.4					3.8	(3.4)
23	265	2.3					3.8	---

Time: 105.0°E.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

\*Average values except foF2 and fEs, which are median values.

Table 47

Godhavn, Greenland (69.2°N, 53.5°W)								May 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(3.4)						(3.3)
01		(3.4)						(3.2)
02		(3.5)					(1.2)	(3.25)
03		(3.5)						(3.25)
04		(3.5)						(3.3)
05		(3.6)					3.5	(3.2)
06		(3.8)					4.0	0
07		(4.0)					4.1	0
08		(4.3)					4.4	(3.0)
09		(4.3)					3.4	(3.0)
10		(4.3)					(3.4)	(3.0)
11		(4.3)					2.9	
12		(4.4)					(2.9)	
13		(4.5)					(2.8)	
14		(4.5)					6.0	3.0
15		(4.5)					5.4	(3.1)
16		(4.4)					4.6	(3.0)
17		(4.4)					4.3	(3.1)
18		(4.3)					(4.4)	(3.1)
19		(4.1)					(3.7)	(3.1)
20		3.9					(3.2)	3.2
21		3.8					(1.8)	3.3
22		3.7						3.3
23		3.5					(1.6)	3.3

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 48

Delhi, India (28.6°N, 77.1°E)								May 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---						3.15
01	---	---						3.25
02	---	---						3.25
03	---	---						3.25
04	---	---						3.4
05	(260)	(4.1)						3.35
06	260	4.9						3.35
07	270	5.8						3.35
08	280	6.5						3.2
09	280	6.4						3.0
10	320	6.4						2.95
11	320	>7.0						2.9
12	330	8.1						2.9
13	330	>8.0						3.0
14	320	>8.9						3.15
15	280	>9.0						3.3
16	260	8.8						3.35
17	260	>7.6						3.4
18	240	7.2						3.5
19	240	6.9						3.5
20	240	5.9						3.35
21	260	>4.8						3.2
22	(290)	(4.2)						3.2
23	---	(3.9)						3.2

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

\*\*Average values; other columns, median values.

Bombay, India (19.0°N, 73.0°E)

Table 49

May 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06:30		270	4.7					3.25
07		300	5.4					3.1
08		330	6.4					2.9
09		360	6.9					2.85
10		360	7.4					2.75
11		390	8.4					2.6
12		420	9.6					2.5
13		420	10.1					2.55
14		420	>10.6					2.6
15		390	>10.9					2.6
16		390	>10.4					2.65
17		360	9.6					2.75
18		360	8.9					2.8
19		330	7.8					2.9
20		330	6.2					3.0
21		300	5.0					3.1
22		270	4.3					3.2
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

\*\*Average values; other columns, median values.

Tiruchy, India (10.8°N, 78.8°E)

Table 51

May 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06		360	5.3					2.7
07		420	6.5					2.5
08		460	7.2					2.35
09		480	7.0					2.3
10		510	6.8					2.25
11		510	6.9					2.2
12		510	6.7					2.2
13		510	6.8					2.2
14		510	7.4					2.2
15		500	8.0					2.25
16		480	8.3					2.3
17		480	8.0					2.3
18		450	7.8					2.4
19		420	7.2					2.5
20		420	6.8					
21								
22								
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

\*\*Average values; other columns, median values.

Brisbane, Australia (27.5°S, 153.0°E)

Table 53

May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.7					2.1	3.1
01	250	3.8					2.2	3.1
02	250	3.8					1.9	3.05
03	250	3.8					2.5	3.2
04	230	3.8						3.3
05	230	3.2						3.3
06	240	3.2						3.3
07	230	4.8			160	1.9		3.7
08	240	5.0	230	3.5	120	2.5		3.55
09	270	5.5	240	4.0	110	2.9		3.6
10	260	5.8	230	4.0	110	3.0		3.55
11	260	5.6	220	4.1	110	3.1	4.2	3.6
12	290	4.1	210	4.2	110	3.1	4.2	3.5
13	280	5.7	205	4.1	110	3.0	4.2	3.4
14	260	6.1	200	4.0	---	3.0	4.2	3.5
15	250	6.2	225	3.7	110	3.8	4.2	3.5
16	240	5.8	---	3.2	120	2.2	4.2	3.6
17	220	4.8			---	1.7	4.0	3.6
18	220	3.8					3.2	3.4
19	250	3.5						3.2
20	250	3.7						3.2
21	250	3.8						3.2
22	240	3.7						3.2
23	250	3.7						3.2

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 sec. mid.

Madras, India (13.0°N, 80.2°E)

Table 50

May 1954

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06		330	5.4					2.9
07		390	6.5					2.7
08		420	7.4					2.5
09		450	7.3					2.4
10		460	7.4					2.4
11		480	7.1					2.35
12		480	7.2					2.3
13		480	7.6					2.3
14		480	8.1					2.3
15		460	8.5					2.35
16		480	>9.0					2.4
17		420	>9.0					2.5
18		400	8.4					2.55
19		350	>7.2					2.65
20		380	>6.0					2.7
21		360	>5.5					2.85
22		---	---					
23								

Time: 75.0°E.

Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.

\*Height at 0.83 foF2.

\*\*Average values; other columns, median values.

Townsville, Australia (19.3°S, 146.7°E)

Table 52

May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	(2.9)						(3.15)
01	250	(3.0)						---
02	250	(3.1)						---
03	240	(3.0)						(3.2)
04	240	(2.8)						(3.2)
05	(250)	(2.5)						(3.2)
06	(250)	2.6					2.7	(3.15)
07	220	4.6			130	2.0	3.0	3.65
08	240	5.4	220	3.1	110	2.2	3.7	3.6
09	250	5.8	220	3.9	110	2.7	3.5	3.5
10	250	6.5	210	4.0	110	3.0	3.7	3.6
11	270	6.0	200	4.2	110	3.1	3.6	3.45
12	280	5.9	200	4.2	110	3.2	4.0	3.4
13	260	6.4	210	4.1	110	3.2	4.1	3.4
14	260	6.5	210	4.0	110	3.1	5.1	3.5
15	250	6.2	210	3.8	110	2.9	3.9	3.45
16	240	6.1	210	3.4	---	---	3.8	3.4
17	220	5.6			---	---	4.0	3.4
18	230	4.2					3.5	3.5
19	230	3.5					3.3	3.35
20	<230	3.3						3.3
21	250	3.0						3.1
22	250	3.0						(3.2)
23	260	(3.0)						(3.1)

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Canberra, Australia (35.3°S, 149.0°E)

Table 54

May 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(3.5)					2.9	3.2
01	---	3.5					2.9	3.2
02	(255)	3.7					2.8	3.1
03	(265)	3.8					1.8	3.1
04	(250)	4.0						3.2
05	(210)	3.8						3.5
06	---	2.9						3.3
07	230	3.9			---	---		3.6
08	225	4.7	---	---	110	2.0		3.6
09	250	5.1	230	(3.6)	110	2.5	3.2	3.6
10	260	5.4	230	3.9	110	2.8	3.5	3.55
11	260	5.5	210	4.0	110	3.0	3.6	3.5
12	260	5.5	205	4.0	110	2.9	3.6	3.4
13	270	5.6	210	4.0	110	2.9	3.6	3.4
14	270	6.0	220	3.9	110	2.7	3.6	3.4
15	240	6.5	220	(3.6)	110	2.5	3.6	3.6
16	220	5.9	220	(3.0)	110	2.0	3.7	3.6
17	220	4.9					3.2	3.5
18	(210)	3.6					2.8	3.4
19	---	3.1					2.4	3.2
20	---	3.5						3.2
21	---	3.5						3.2
22	---	(3.4)						3.3
23	---	3.5						3.2

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 55

Hobart, Tasmania (42.9°S, 147.3°E)								May 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	2.0						3.0
01	295	2.1						3.0
02	290	2.2						3.0
03	285	2.5						3.0
04	270	2.3						3.0
05	270	2.2						3.0
06	270	2.1						3.1
07	250	2.5			---	E		3.1
08	230	4.0			105	1.9		3.2
09	220	4.5			100	2.2		3.25
10	220	4.7			100	2.5		3.2
11	210	5.0			100	2.5		3.2
12	210	5.5			100	2.6	3.2	3.2
13	210	5.5			100	2.6	3.2	3.2
14	220	5.5			100	2.5	3.2	3.2
15	230	5.6			100	2.3		3.2
16	230	5.5			100	2.0		3.3
17	220	4.6						3.3
18	240	3.5						3.0
19	250	2.7						3.1
20	270	2.4						3.1
21	270	2.2						3.0
22	270	2.2						3.1
23	280	2.0						3.1

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 56\*

Port Lockroy (64.8°S, 63.5°W)								May 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	2.2					1.0	2.8
01	280	2.2					1.0	2.8
02	270	2.2						2.8
03	270	2.2						2.9
04	260	2.3						2.9
05	240	2.1					1.3	2.9
06	235	2.0					1.1	3.1
07	225	1.8						3.2
08	235	1.9					2.0	3.2
09	210	3.7					2.5	3.4
10	210	4.1					3.2	3.6
11	205	4.6					3.1	3.6
12	210	4.7					2.4	3.6
13	210	4.7					2.1	3.6
14	205	4.4					1.9	3.6
15	210	3.8					1.8	3.5
16	220	3.2					2.4	3.3
17	230	3.0					1.4	3.3
18	225	2.5					1.4	3.3
19	240	1.9						3.3
20	265	1.8						3.0
21	295	1.8						2.8
22	305	2.0						2.8
23	295	2.1						2.8

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

\*Average values except foF2 and fEs, which are median values.

Table 57

Townsville, Australia (19.3°S, 146.7°E)								April 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<280	3.1						(3.1)
01	<260	3.0					2.5	(3.1)
02	250	3.1					2.0	(3.2)
03	230	3.2					2.7	(3.5)
04	240	2.8					3.0	(3.1)
05	(250)	2.3					2.8	(3.05)
06	250	2.6					3.0	3.1
07	240	4.8			140	2.0	3.1	3.6
08	250	5.9	230	3.8	110	2.4	3.2	3.4
09	250	6.7	220	4.0	110	2.8	3.7	3.4
10	250	(7.9)	210	4.2	100	3.1	3.7	3.4
11	250	8.2	200	4.3	100	3.2	3.8	3.5
12	250	6.9	200	4.3	100	3.2	3.8	3.5
13	290	6.8	200	4.2	100	3.2	4.0	3.2
14	270	7.5	220	4.2	110	3.1	4.3	3.3
15	250	7.8	220	4.0	110	3.0	4.7	3.4
16	240	7.0	220	3.7	120	2.7	4.0	3.5
17	230	6.4	---	3.1	100	2.1	4.0	3.6
18	220	5.4					3.9	3.6
19	240	4.2					3.4	3.3
20	240	3.5					3.3	3.3
21	250	3.2					2.4	3.0
22	260	3.3						3.0
23	<260	3.2						(3.0)

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 58

Brisbane, Australia (27.5°S, 153.0°E)								April 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.8					2.8	3.1
01	290	3.7					3.6	3.1
02	270	3.7					3.8	3.1
03	240	4.0						3.5
04	230	3.6					3.2	3.45
05	240	3.0						3.2
06	240	3.3						3.4
07	240	4.8	---	---	120	2.2		3.5
08	250	5.7	240	3.9	110	2.5		3.5
09	270	6.3	230	4.1	110	3.0	3.5	3.4
10	270	6.9	230	4.2	110	3.1		3.5
11	280	6.9	220	4.2	110	3.2	4.1	3.4
12	280	6.9	200	4.2	110	3.2	4.2	3.4
13	280	6.9	200	4.2	100	3.2	4.2	3.35
14	280	6.9	220	4.1	110	3.2	4.0	3.35
15	260	7.0	230	4.0	100	2.9	4.2	3.5
16	240	6.4	230	3.5	---	(2.4)	4.4	3.6
17	230	5.6	---	---	---	---	4.1	3.6
18	230	4.7						3.4
19	240	4.1					2.8	3.3
20	250	3.9						3.2
21	250	4.0						3.15
22	250	3.8					2.2	3.1
23	270	3.7						3.1

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 59

Hobart, Tasmania (42.9°S, 147.3°E)								April 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	2.2						3.0
01	280	2.4					2.8	3.0
02	290	2.3					3.2	3.0
03	270	2.2					3.2	3.0
04	280	2.2					3.1	3.0
05	260	2.2					2.7	3.05
06	---	E						3.0
07	250	3.5			130	1.5		3.2
08	230	4.2			100	2.1		3.2
09	220	4.6	---	---	100	2.4		3.2
10	220	5.0	200	4.0	100	2.6		3.1
11	260	5.5	200	4.0	100	2.8	3.0	3.2
12	220	6.0	200	4.0	100	2.9	3.5	3.2
13	230	6.0	200	4.0	100	2.8		3.2
14	220	6.0	200	4.0	100	2.8	3.2	3.2
15	220	6.0	---	---	100	2.6	3.4	3.2
16	230	5.6			100	2.4	3.5	3.2
17	230	5.5			100	1.9	2.8	3.3
18	230	5.0						3.15
19	250	4.0						3.1
20	250	3.4						3.0
21	250	3.0						3.0
22	270	2.6						3.0
23	280	2.5						3.0

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 60

Lulea, Sweden (65.6°N, 22.1°E)								February 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	(2.0)					2.4	
01								
02	(335)	---					2.4	
03								
04	(355)	---						
05								
06	---	---						
07								
08	240	3.1			---	1.6		
09								
10	230	4.0	190	2.3	120	2.0		
11								
12	235	4.4	205	2.6	130	2.1		
13								
14	225	4.2	190	2.3	135	1.9		
15								
16	230	3.5			---	---		
17								
18	260	2.1						
19								
20	(310)	---						
21								
22	(305)	---					2.5	
23								

Time: 15.0°E.

Sweep: 1.5 Mc to 10.0 Mc in 6 minutes.

Table 61\*

Ibadan, Nigeria (7.4°N, 4.0°E)							
February 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	255	5.6					1.2 3.1
01	255	5.3					1.3 3.2
02	250	4.6					1.3 3.2
03	255	3.8					3.3
04	250	3.9					3.3
05	240	2.0					---
06	255	3.3	---	---	---	(1.3)	---
07	---	6.1	240	---	112	2.1	3.5 3.4
08	290	6.9	225	---	110	2.8	4.0 3.2
09	320	7.0	215	---	4.1	108	3.1 5.0
10	360	7.0	210	4.3	106	3.3	6.8 2.6
11	375	6.8	205	4.3	105	3.4	6.8 2.5
12	370	6.8	205	4.3	105	3.5	6.8 2.6
13	370	7.0	205	4.4	107	3.4	6.6 2.5
14	345	(8.1)	205	4.2	108	3.3	6.6 2.6
15	325	(8.1)	210	4.0	108	3.1	5.5 2.6
16	(310)	(8.4)	215	---	109	2.8	5.5
17	---	(8.3)	245	---	109	2.2	4.9
18	260	7.0	---	---	---	(1.4)	1.9
19	280	7.0					1.6
20	285	7.0					2.8
21	270	6.8					---
22	240	6.8					---
23	245	6.4					3.2

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

\*Average values except foF2 and fEs, which are median values.

Table 62

Godhavn, Greenland (69.2°N, 53.5°W)							
January 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00		(2.0)					5.4 (3.0)
01		(2.0)					4.2 (3.1)
02		(2.1)					4.1 (3.0)
03		(2.5)					3.8 (3.0)
04		(2.6)					3.2 (3.1)
05		(2.7)					3.6 (3.05)
06		(2.9)					3.9 (3.3)
07		(3.2)					6.3 (3.4)
08		(3.5)					6.0 (3.4)
09		(3.6)					4.5 (3.4)
10		(3.6)					3.8 (3.3)
11		(3.8)					4.6 (3.3)
12		(4.0)					5.0 (3.35)
13		(4.2)					5.4 (3.35)
14		(4.0)					6.8 (3.4)
15		(3.8)					5.4 (3.3)
16		(3.5)					7.1 (3.3)
17		(3.4)					6.8 (3.2)
18		(3.3)					4.9 (3.2)
19		(3.1)					5.0 (3.2)
20		(3.0)					5.2 (3.2)
21		(2.9)					4.2 (3.2)
22		(2.5)					4.9 (3.2)
23		(2.2)					5.3 (3.2)

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 63

Godhaven, Greenland (69.2°N, 53.5°W)							
December 1953							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00		(2.1)					(4.9) (3.2)
01		(2.0)					(4.6) (3.2)
02		(2.2)					(4.9) (3.0)
03		(2.4)					(5.2) (3.1)
04		(2.7)					(5.8) (3.15)
05		(2.8)					5.0 (3.3)
06		(3.0)					(4.5) (3.4)
07		(3.2)					4.2 (3.5)
08		(3.4)					4.4
09		(3.4)					4.3 (3.3)
10		(3.4)					(4.0) (3.3)
11		(3.6)					(3.8) (3.3)
12		(3.6)					(6.2) (3.35)
13		(3.6)					(7.0) (3.4)
14		(3.6)					(6.8) (3.4)
15		(3.5)					(5.8) (3.3)
16		(3.4)					(6.2) (3.2)
17		(3.2)					(6.8) (3.2)
18		(3.0)					(5.6) (3.2)
19		(3.2)					(5.4) (3.2)
20		(3.2)					(5.1) (3.2)
21		(2.8)					(5.2) (3.3)
22		(2.6)					(6.2) (3.2)
23		(2.6)					(4.2) (3.3)

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 64

Townsville, Australia (19.3°S, 146.8°E)							
December 1953							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	260	(4.8)					4.1 (3.2)
01	240	> 4.8					4.0
02	250	4.6					4.2 3.2
03	250	(3.5)					3.9 3.15
04	240	3.8					3.0 3.2
05	230	2.8					3.0 3.35
06	230	4.2			120	1.6	3.4 3.5
07	250	4.5	230	3.5	100	2.4	4.4 3.4
08	(280)	(5.4)	230	4.0	100	2.8	5.8 (3.3)
09	(330)	5.8	200	4.1	100	3.0	5.5 (3.1)
10	350	6.4	---	4.2	100	3.2	5.4 3.0
11	350	7.1	200	4.3	110	3.3	5.0 2.8
12	340	8.6	---	4.3	110	3.3	> 4.4
13	320	> 9.0	---	4.3	100	3.3	> 4.6
14	300	10.2	---	4.2	100	3.2	5.0 (3.2)
15	280	9.5	210	4.1	110	3.1	4.7
16	280	(9.0)	---	4.0	110	2.9	5.4
17	(270)	---	---	3.7	100	2.5	4.8
18	260	(7.1)	---	---	---	---	5.0 (3.1)
19	(250)	7.0	---	---	---	---	4.0 (3.1)
20	260	(6.6)	---	---	---	---	4.1 (3.0)
21	270	---	---	---	---	---	3.8
22	270	(5.4)	---	---	---	---	3.8 (3.0)
23	270	> 4.7	---	---	---	---	3.7 (3.05)

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 65

Brisbane, Australia (27.5°S, 153.0°E)							
December 1953							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	< 260	5.5					5.5 3.2
01	(240)	5.0					4.7 (3.3)
02	< 250	4.1					4.1 3.2
03	(250)	3.8					4.1 3.2
04	250	3.6					3.7 3.2
05	250	3.8			150	1.7	2.7 3.5
06	240	4.7			110	2.1	4.0 3.5
07	(235)	5.2	---	4.1	110	2.6	4.2 3.2
08	(330)	5.8	---	---	100	3.0	4.9 3.15
09	(320)	5.8	---	---	100	3.3	6.6 3.0
10	(350)	6.4	---	---	110	3.4	8.0 3.0
11	310	6.6	---	---	110	3.4	7.7 3.1
12	320	7.4	---	---	110	3.4	7.5 3.0
13	320	7.0	---	---	4.6	110	3.4 3.0
14	300	7.5	230	4.3	110	3.3	5.8 3.0
15	290	7.4	---	4.2	110	3.1	5.4 3.1
16	290	7.2	230	4.0	110	2.8	4.2 3.2
17	240	7.0	---	3.6	110	2.3	4.2 3.2
18	250	6.3			---	---	4.7 3.2
19	< 260	5.9					4.2 3.1
20	(250)	5.8					4.7 3.0
21	---	5.3					5.6 3.0
22	280	5.2					5.4 3.0
23	(280)	(5.5)					5.2 (3.0)

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 66

Canberra, Australia (35.3°S, 149.0°E)							
December 1953*							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	(4.3)					4.2
01	---	(4.0)					(4.4)
02	---	(2.9)					(4.9)
03	---	(3.5)					(3.8)
04	---	(3.5)					(3.5)
05	---	(3.6)					(3.5)
06	---	(4.4)	---	---	110	2.1	(3.6)
07	---	(4.8)	---	---	100	2.6	(4.8)
08	---	(5.2)	---	---	100	2.9	(5.0)
09	---	---	---	---	100	3.1	(6.2)
10	---	---	---	---	110	(5.3)	(6.3)
11	---	(6.4)	---	---	100	3.4	(5.0)
12	(33°)	(6.2)	---	---	110	3.4	3.7 (3.0)
13	(34°)	(6.1)	---	---	110	3.4	5.2 (3.0)
14	(320)	(7.0)	---	---	110	3.4	5.0 (3.0)
15	(300)	(6.4)	---	---	110	3.2	4.5 (3.2)
16	(30°)	(6.4)	---	---	110	3.0	4.5 (3.2)
17	280	(6.1)	210	3.8	110	2.7	4.1 (3.1)
18	(260)	(5.5)	200	(3.3)	---	2.2	3.6 (3.2)
19	(240)	(4.6)					3.5
20	---	---					3.1
21	---	(4.8)					3.3 (3.0)
22	---	(4.6)					4.2 (3.0)
23	---	(4.5)					3.9

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

\*Observations 16th through 31st only.

Table 67

Hobart, Tasmania (42.9°S, 147.3°E) December 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	4.2					4.0	3.0
01	250	3.7					3.3	3.0
02	250	3.2					3.2	3.0
03	250	3.0					3.5	3.0
04	250	3.0					2.3	3.0
05	240	3.5			120	1.8	2.1	3.1
06	220	4.0			100	2.1		3.1
07	250	4.4			100	2.6		3.05
08	340	5.0	200	4.0	100	2.9	2.5	3.0
09	350	5.2	210	4.0	100	3.0	5.0	2.9
10	320	5.5	200	4.2	100	3.2	3.7	3.05
11	310	5.6	200	4.3	100	3.2	4.0	3.1
12	330	5.6	200	4.4	100	3.3	4.2	3.0
13	320	5.6	200	4.4	100	3.2	4.2	3.0
14	330	5.6	200	4.4	100	3.2	3.6	3.0
15	300	5.6	200	4.2	100	3.1	3.6	3.0
16	300	5.6	200	4.0	100	3.0	3.5	3.0
17	270	5.6	200	3.8	100	2.6	3.2	3.1
18	250	5.5	---	---	100	2.2	4.0	3.1
19	240	5.6					4.2	3.1
20	230	5.5					3.8	3.1
21	250	5.2					4.2	3.0
22	250	5.0					4.2	3.0
23	250	4.5					4.0	3.0

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 68

Godhavn, Greenland (69.2°N, 53.5°W) November 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	(2.1)					4.6	(3.2)
01	< 270	(2.2)					4.1	(3.1)
02	(260)	(2.0)					4.4	(3.1)
03	< 270	(2.4)					3.4	(3.1)
04	(270)	(2.6)					3.7	(3.1)
05	(250)	(2.6)					3.7	(3.3)
06	< 240	(2.7)					3.7	---
07	(240)	(2.8)					4.3	(3.4)
08	(240)	(3.0)					5.0	(3.3)
09	(240)	(3.2)					4.2	(3.3)
10	250	(3.4)	---	---			3.6	(3.3)
11	(250)	(3.7)	---	---			2.3	(3.3)
12	(250)	(4.0)	---	---	---	---	3.5	(3.3)
13	(250)	(3.6)	---	---			3.5	(3.4)
14	(250)	(3.6)	---	---			5.2	(3.3)
15	(240)	(3.5)	---	---			5.7	(3.4)
16	(240)	(3.4)					6.6	(3.3)
17	(240)	(3.3)					5.0	(3.2)
18	(240)	(3.2)					(6.6)	(3.2)
19	< 240	(3.1)					(5.5)	(3.2)
20	< 240	(3.2)					> 5.0	(3.3)
21	< 240	(2.9)					(4.8)	(3.2)
22	< 250	(2.5)					4.2	(3.2)
23	< 260	(2.2)					4.0	(3.2)

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 69

Poitiers, France (46.6°N, 0.3°E) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	< 275	3.4					2.3	2.9
01	280	3.3					2.2	2.9
02	< 280	3.2					2.1	2.9
03	265	3.0					2.0	2.95
04	260	2.7					2.2	2.9
05	< 250	2.5					2.2	3.05
06	245	3.5	210	---	---	---	2.5	3.3
07	265	4.2	225	3.4	120	2.1	2.9	3.4
08	290	5.0	220	3.8	110	2.5	3.0	---
09	295	5.2	205	4.0	105	2.8	3.3	(3.4)
10	290	5.4	205	4.1	105	2.9	3.5	(3.4)
11	295	5.6	205	4.2	105	3.0	3.6	3.5
12	300	5.4	200	4.2	105	3.0	3.6	3.3
13	300	5.4	200	4.2	105	3.0	3.4	3.35
14	290	5.5	220	4.0	110	2.9	3.3	3.3
15	295	5.3	220	4.0	110	2.7	3.1	3.35
16	290	5.3	235	3.8	110	2.4	3.0	3.25
17	270	5.4	245	3.5	120	2.1	2.8	3.2
18	250	5.6	250	---	---	---	2.6	3.15
19	240	5.4					2.4	(3.1)
20	245	4.7					2.7	(3.2)
21	250	4.6					2.7	3.2
22	250	3.8					2.4	3.0
23	265	3.4					2.4	2.9

Time: 0.0°.

Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 70

Casablanca, Morocco (33.6°N, 7.6°W) September 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.2					2.6	2.9
01	---	3.1					2.3	2.9
02	---	3.2					2.1	2.9
03	---	3.1					2.0	3.0
04	---	2.9					2.0	3.1
05	---	2.7					2.2	3.2
06	---	2.8					2.8	3.35
07	225	4.4	210	2.9	115	1.9	3.5	3.6
08	245	5.2	220	3.6	110	2.4	3.6	3.6
09	250	5.6	215	4.0	105	2.7	3.5	3.7
10	285	5.5	200	4.2	100	3.0	3.7	3.45
11	300	5.9	200	4.4	100	3.2		3.3
12	300	6.0	195	4.4	100	3.3		3.3
13	300	6.0	200	4.4	100	3.2		3.3
14	300	6.5	220	4.3	100	3.2		3.3
15	300	6.4	235	4.3	100	3.0		3.3
16	295	6.4	225	4.0	100	2.8	3.5	3.3
17	265	7.1	240	3.7	105	2.4	3.8	3.3
18	255	7.4	250	3.1	115	1.8	3.7	3.3
19	240	(7.2)	---	---			3.5	3.4
20	< 225	6.6					3.4	3.35
21	205	4.5					3.1	3.25
22	---	4.0					3.0	3.0
23	---	3.5					2.8	2.95

Time: 0.0°.

Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 71

Djibouti, French Somaliland (11.5°N, 43.1°E) June 1953

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	332	---					---	---
01	335	(3.2)					---	---
02	350	(2.2)					---	---
03	330	(2.1)					---	---
04	270	(2.7)					---	---
05	270	2.8					3.1	---
06	250	5.7	242	---	---	2.0	3.5	3.25
07	295	6.6	235	4.0	116	2.7	3.8	3.1
08	345	7.0	228	4.3	113	3.0	3.8	2.8
09	390	6.8	222	4.4	---	3.2	4.3	2.6
10	400	6.8	220	4.5	115	3.4	4.3	2.45
11	420	6.7	212	4.6	114	(3.5)	6.0	2.45
12	418	6.8	215	4.5	121	(3.5)	4.4	2.5
13	350	7.2	220	4.4	119	3.4	4.4	2.55
14	392	7.7	220	4.4	116	3.3	4.0	2.65
15	360	8.4	222	4.2	120	3.2	4.0	2.75
16	342	8.6	230	4.1	121	2.8	4.2	2.8
17	300	8.6	238	---	---	---	3.8	2.85
18	255	8.7					3.2	3.0
19	250	8.6					3.4	3.15
20	260	(6.2)					2.1	2.95
21	290	5.0					2.8	2.8
22	330	> 4.0					2.8	2.8
23	340	> 4.0					(2.8)	---

Time: 35.6°E.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 72

Leopoldville, Belgian Congo (4.3°S, 15.3°E) November 1952

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M2000)F2
00	255	6.0						2.2
01	250	5.8						2.2
02	240	5.4						2.4
03	230	4.2						2.4
04	225	3.8						2.5
05	250	5.2	---	---	130	1.8	2.0	2.6
06	255	6.5	235	---	120	2.4	2.9	2.5
07	295	6.9	230	4.4	115	3.0	3.3	2.2
08	340	7.8	220	4.5	115	3.2	3.3	2.0
09	410	8.7	210	4.6	115	3.4		1.9
10	400	9.8	210	4.6	115	3.5	2.5	1.9
11	410	10.6	210	4.6	110	3.6		1.9
12	400	10.9	210	4.6	115	3.5	4.1	1.9
13	380	11.2	210	4.5	115	3.4	3.7	1.9
14	370	11.4	230	4.4	115	3.1	3.7	2.0
15	350	11.4	235	4.3	115	2.7	3.6	2.05
16	330	11.6	245	---	120	---	2.2	2.1
17	25	11.1			---	---	2.6	2.1
18	250	10.9					2.3	2.1
19	270	10.8						2.1
20	250	11.0						2.3
21	225	11.4						2.6
22	220	3.2						2.5
23	220	7.0						2.2

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.



TABLE 73

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

NBS-D-3  
Form adopted June 1946

h'F2 Km December 1954

Observed at Washington, D C

IONOSPHERIC DATA

National Bureau of Standards

Scaled by E.J.W., J.W.P., J.J.S.  
Calculated by E.J.W., J.W.P., J.J.S.

Lat 38.7°N Long 77.1°W

75°W

Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
2	100	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
3	200	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
4	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
5	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
6	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
7	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
8	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
9	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
10	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
11	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
12	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
13	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
14	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
15	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
16	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
17	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
18	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
19	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
20	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
21	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
22	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
23	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
24	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
25	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
26	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
27	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
28	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
29	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
30	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
31	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

CP-3 81-440-99

TABLE 74

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

## IONOSPHERIC DATA

foF2 \_\_\_\_\_ Mc \_\_\_\_\_ December, 1954  
(Characteristics) (Unit) (Month)

Observed at Washington, D.C.

Lat 38.7°N Long 77.1°W

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
2	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
3	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
4	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
5	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
6	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
7	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
8	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
9	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
10	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
11	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
12	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
13	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
14	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
15	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
16	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
17	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
18	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
19	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
20	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
21	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
22	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
23	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
24	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
25	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
26	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
27	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
28	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
29	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
30	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
31	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
Median	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241
Count	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

04, 60

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

National Bureau of Standards

Scaled by E.J.W., J.W.P., J.J.S.

Calculated by E.J.W., J.W.P., J.J.S.

TABLE 75

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

foF2 \_\_\_\_\_ Mc \_\_\_\_\_ December 1954

(Characteristic)

(Unit)

(Month)

Observed at \_\_\_\_\_ Washington, D. C.

IONOSPHERIC DATA

National Bureau of Standards

(Institution)

Scaled by \_\_\_\_\_ E. J. W. J. W. P. J. J. S.

Calculated by \_\_\_\_\_ E. J. W. J. W. P. J. J. S.

75° W Mean Time

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
10	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
11	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
12	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
13	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
14	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
15	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
16	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
17	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
18	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
19	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
21	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
22	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
23	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
24	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
26	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
27	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
28	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
29	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
30	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Mean	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

UN. 66

— sweep 10. Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒



NBS-D-3  
Form adopted June 1946TABLE 76  
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.National Bureau of Standards  
(Establishment)

Scaled by: E. J. W., J. W. P., J. J. S.

Calculated by: E. J. W., J. W. P., J. J. S.

## IONOSPHERIC DATA

h'F1 \_\_\_\_\_ Km \_\_\_\_\_ December 1954  
(Characteristic) (Unit) (Month)

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	A	2.20	2.00	[2.00] <sup>A</sup>	2.10	2.10	2.30	Q							
2									Q	2.00	2.00	2.10	2.10	2.10	2.10	2.30	Q							
3									Q	Q	2.20	2.10	2.10	2.30	2.30	2.00 <sup>H</sup>	Q							
4									(2.10) <sup>S</sup>	2.10	2.10	[2.00] <sup>H</sup>	2.00	2.40	(2.10) <sup>A</sup>	(2.10) <sup>A</sup>	Q							
5									A	2.00	1.80	2.00	2.00	2.30	2.30	2.20	Q							
6									Q	Q	2.20	(2.20) <sup>A</sup>	2.20	2.20	2.30	A	A							
7									Q	Q	2.10	2.40	2.20	2.00	2.00 <sup>H</sup>	2.20	2.30							
8									Q	2.20	2.20	2.00	2.30	2.30	2.30	2.20	Q							
9									Q	2.30	2.00	2.20	2.20	2.10	2.20	2.20	2.10							
10									Q	Q	2.20	2.20	2.10	2.20	2.30	A	Q							
11									A	2.00	2.10	1.80	1.80 <sup>H</sup>	2.20	2.00	2.20	Q							
12									Q	A	2.10	(2.30) <sup>A</sup>	2.10	A	A	A	Q							
13									Q	2.30	2.00	2.20	2.00 <sup>H</sup>	2.00	2.10	2.30	Q							
14									Q	A	1.70	1.90	2.00	2.20	2.10	2.00	Q							
15									A	Q	2.10	2.30	2.40	2.30	2.40	2.30	Q							
16									Q	2.00 <sup>H</sup>	2.10	2.40	2.10	2.30	2.20	2.10	Q							
17									Q	Q	2.30	2.30	2.00 <sup>H</sup>	2.20	2.20	2.20	(2.30) <sup>A</sup>							
18									Q	2.10	1.90	1.90	2.20	2.20	2.00 <sup>H</sup>	2.00	2.10							
19									2.20	2.10	1.80	1.80	2.30	2.40	2.20	A	Q							
20									Q	2.30	2.20	2.40	2.10	1.90 <sup>H</sup>	2.00 <sup>H</sup>	2.00	Q							
21									Q	Q	2.00	(2.00) <sup>A</sup>	A	A	2.00	2.20	Q							
22									Q	2.20 <sup>H</sup>	1.80	2.00	2.10	2.00	2.30	2.30	2.20							
23									Q	2.10	2.10	2.10	2.10	2.40	2.20	(2.20) <sup>A</sup>	2.30							
24									Q	2.20	2.20	2.10	2.10	2.10	2.00	2.00	Q							
25									Q	2.20	2.20	2.00	2.00	2.20	2.20	2.20	Q							
26									Q	A	2.20	2.10	2.10	2.00	2.00 <sup>H</sup>	2.10	2.30							
27									Q	2.40	2.20	2.20	2.00 <sup>H</sup>	2.10	2.20	2.30	2.30							
28									Q	2.30	2.20	1.90	2.00 <sup>H</sup>	2.10	(2.30) <sup>A</sup>	2.30	Q							
29									Q	2.30	2.30	2.10	1.90 <sup>H</sup>	1.80 <sup>H</sup>	2.30	2.30	Q							
30									Q	2.20	2.20	2.00	2.00	2.00	2.40	2.10	Q							
31									Q	2.20	2.10	2.00	1.80	2.10	2.20	2.20	Q							
Median									—	2.20	2.10	2.10	2.10	2.20	2.20	2.20	2.20							
Count									2	20	30	31	30	34	30	27	4							

04.60

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 77

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

foF1 \_\_\_\_\_ Mc \_\_\_\_\_ December, 1954  
(Characteristic) (Time)

(Month)

Observed at \_\_\_\_\_ Washington, D C

Lat 38.7°N Long 77.1°W

IONOSPHERIC DATA

National Bureau of Standards

(Institution)

Scaled by E.J.W., J.W.P., J.J.S.

Calculated by E.J.W., J.W.P., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	A	L	L	A	L	L	L	Q							
2									Q	L	L	L	(.37) <sup>L</sup>	L	L	L	Q							
3									Q	Q	Q	L	L	L	L	L	L							
4									L	L	L	L	L	L	(.36) <sup>L</sup>	L	Q							
5									A	L	(.34) <sup>H</sup>	37	37	(.36) <sup>L</sup>	(.36) <sup>L</sup>	L	Q							
6									Q	Q	L	A	L	(.34) <sup>L</sup>	L	L	A							
7									Q	Q	(.42) <sup>H</sup>	L	L	37	(.36) <sup>H</sup>	L	L							
8									Q	L	L	L	L	L	L	L	Q							
9									Q	L	L	L	L	L	L	L	L							
10									Q	Q	L	L	L	L	L	A	Q							
11									A	L	L	(.37) <sup>H</sup>	L	L	L	L	Q							
12									Q	A	L	L	L	A	L	A	Q							
13									Q	L	L	(.38) <sup>L</sup>	L	L	L	L	Q							
14									Q	A	(.34) <sup>H</sup>	A	L	L	L	L	Q							
15									A	Q	L	L	L	L	L	L	Q							
16									Q	L	(.37) <sup>H</sup>	(.42)	L	L	L	L	Q							
17									Q	Q	L	(.33) <sup>L</sup>	(.39) <sup>L</sup>	37	(.36)	L	L							
18									Q	L	L	L	L	L	L	L	L							
19									L	27	(.30) <sup>L</sup>	(.34) <sup>L</sup>	L	L	L	A	Q							
20									Q	L	L	L	L	(.36) <sup>L</sup>	(.33) <sup>H</sup>	L	Q							
21									Q	Q	L	(.37) <sup>F</sup>	L	A	(.37) <sup>L</sup>	L	Q							
22									Q	L	L	L	L	L	L	L	L							
23									Q	L	L	(.38)	L	L	L	L	L							
24									Q	L	L	(.38) <sup>L</sup>	L	L	L	L	Q							
25									Q	L	L	(.38) <sup>L</sup>	L	L	L	L	Q							
26									Q	A	(.36) <sup>L</sup>	(.37) <sup>L</sup>	(.38) <sup>L</sup>	(.35) <sup>L</sup>	L	L	L							
27									Q	L	(.37) <sup>L</sup>	(.38) <sup>H</sup>	L	L	L	L	L							
28									Q	L	L	(.36) <sup>L</sup>	(.37) <sup>L</sup>	L	L	L	Q							
29									Q	L	L	(.38) <sup>H</sup>	37	(.37) <sup>L</sup>	L	L	Q							
30									Q	L	(.38) <sup>L</sup>	(.39) <sup>L</sup>	L	L	L	L	Q							
31									Q	L	L	(.38) <sup>L</sup>	L	L	L	L	Q							
Median									—	—	(.36)	(.38)	(.37)	(.37)	(.36)	—	—							
Count									1	9	17	6	7	6										

Sweep 1.0 - Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U<sub>1</sub>, 60

TABLE 78

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

NBS-D-3  
Form adopted June 1946National Bureau of Standards  
(Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

## IONOSPHERIC DATA

75° W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									(130) <sup>S</sup>	110 <sup>H</sup>	100 <sup>H</sup>	120 <sup>H</sup>	R	R	100 <sup>H</sup>	110 <sup>H</sup>	(120) <sup>S</sup>							
2								(120) <sup>S</sup>	110 <sup>H</sup>	100 <sup>H</sup>	110 <sup>H</sup>	110 <sup>H</sup>	100 <sup>H</sup>	100 <sup>H</sup>	100 <sup>H</sup>	120 <sup>H</sup>	(120) <sup>S</sup>							
3								130	120	120	120	120	(120) <sup>B</sup>	(120) <sup>B</sup>	110	B	R							
4								S	110	R	R	R	R	R	R	R	R							
5								R	110	110	110	(110) <sup>R</sup>	(120) <sup>R</sup>	(120) <sup>R</sup>	120	110	S							
6								(120) <sup>S</sup>	110	100	100	100 <sup>H</sup>	R	R	R	R	R							
7								R	R	R	R	110	110	110	110	R	R							
8								S	120	110	110	100 <sup>H</sup>	110 <sup>H</sup>	110 <sup>H</sup>	110 <sup>H</sup>	120 <sup>H</sup>	120 <sup>H</sup>							
9								S	(120) <sup>R</sup>	110	120	(120) <sup>R</sup>	(120) <sup>R</sup>	110	110	110	S							
10								S	R	100	100	100 <sup>H</sup>	100	110	110	110	120							
11								R	100	110	110	100 <sup>H</sup>	100 <sup>H</sup>	120 <sup>H</sup>	110 <sup>H</sup>	110	120							
12								R	120	100	100	100 <sup>H</sup>	100 <sup>H</sup>	100 <sup>H</sup>	100 <sup>H</sup>	120	120							
13								S	R	110	110	110	100	110	110	110	S							
14								120	110	110	(120) <sup>R</sup>	(120) <sup>R</sup>	110	110	100	110	S							
15								S	(110) <sup>R</sup>	110	(110) <sup>R</sup>	100 <sup>H</sup>	100 <sup>H</sup>	110	110	110	120	(130) <sup>S</sup>						
16								S	110	110	110	110 <sup>H</sup>	110	110	110	110	(120) <sup>S</sup>							
17								S	(120) <sup>S</sup>	120	120	120	110	110	110	110	120 <sup>H</sup>	R						
18								S	120	120	120	110	100 <sup>H</sup>	110	110	110	(120) <sup>S</sup>							
19								S	(120) <sup>S</sup>	110	110	110	110	110	110	110	120	(120) <sup>S</sup>						
20								S	110	110	110	110	110	110	110	110	(110) <sup>R</sup>	S						
21								S	110	R	R	(110) <sup>R</sup>	100	110	110	110	R							
22								110 <sup>H</sup>	(110) <sup>R</sup>	100	100	110 <sup>H</sup>	110	110	110	110	120	S						
23								S	110	110	110	110	110	110	110	100 <sup>H</sup>	110	S						
24								S	R	110	110	110	110	110	110	110	130							
25								S	100	110	110	110	(130) <sup>R</sup>	110	110	110	110							
26								S	R	100	100	100	110	100 <sup>H</sup>	100 <sup>H</sup>	100 <sup>H</sup>	(120) <sup>S</sup>							
27								(110) <sup>R</sup>	110	110	110	110	110	110	110	110	110	(120) <sup>S</sup>						
28								S	(100) <sup>S</sup>	110	110	110	110	110	110	110	110	(110) <sup>R</sup>						
29								S	110	110	100 <sup>H</sup>	100 <sup>H</sup>	110	110	110	110	110	(110) <sup>R</sup>						
30								S	120	110	110	110	110	110	110	110	110	S						
31								(140) <sup>S</sup>	110	100	100	120	100 <sup>H</sup>	110	110	100	R							
Median								(120)	110	110	110	110	110	110	110	110	(120)							
Count								8	26	28	28	28	28	28	28	27	16							

04-60

Sweep 1.0 Mc to 25.0 Mc in 0.25 min  
Manual ☐ Automatic ☒

fo E \_\_\_\_\_ Mc \_\_\_\_\_ December 1954  
Observed at \_\_\_\_\_ Washington, D C  
Lat 38.7°N Long 77.1°W

IONOSPHERIC DATA

National Bureau of Standards  
(Institution)

Scaled by E.J.W., J.W.P., J.J.S.

Calculated by E.J.W., J.W.P., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									1.7 <sup>H</sup>	2.1 <sup>H</sup>	2.5 <sup>H</sup>	2.7 <sup>H</sup>	A	A	2.7 <sup>H</sup>	2.4 <sup>H</sup>	(1.8) <sup>P</sup>							
2								1.8 <sup>H</sup>	2.3 <sup>H</sup>	2.5 <sup>H</sup>	2.7 <sup>H</sup>	(2.7) <sup>A</sup>	2.1 <sup>H</sup>	2.5 <sup>H</sup>	2.4 <sup>H</sup>	1.7 <sup>H</sup>								
3								1.9 <sup>H</sup>	2.4 <sup>H</sup>	2.5 <sup>H</sup>	2.7 <sup>H</sup>	2.9 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	B	A								
4								(1.8) <sup>S</sup>	(2.2) <sup>S</sup>	A	A	A	A	A	A	A								
5								A	2.3 <sup>H</sup>	2.6 <sup>H</sup>	2.9 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	2.1 <sup>H</sup>	S							
6								1.7 <sup>H</sup>	(2.4) <sup>P</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	A	A	A	A	A								
7								A	A	A	2.7 <sup>H</sup>	2.9 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	A	A							
8								S	2.3 <sup>H</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	2.2 <sup>H</sup>	1.8 <sup>H</sup>							
9								S	A	2.5 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.1 <sup>H</sup>	S							
10								S	A	(2.3) <sup>A</sup>	2.8 <sup>F</sup>	(2.8) <sup>A</sup>	2.9 <sup>A</sup>	2.9 <sup>A</sup>	(2.6) <sup>A</sup>	A	A							
11								A	(2.3) <sup>A</sup>	2.5 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.8 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	A	F							
12								A	2.3 <sup>H</sup>	2.5 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	2.3 <sup>H</sup>	S							
13								S	A	2.5 <sup>H</sup>	2.6 <sup>F</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	2.2 <sup>H</sup>	S							
14								A	2.2 <sup>H</sup>	(2.5) <sup>A</sup>	(2.8) <sup>A</sup>	(2.8) <sup>A</sup>	(2.6) <sup>A</sup>	(2.5) <sup>A</sup>	A	A	S							
15								S	A	A	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	2.2 <sup>H</sup>	(1.7) <sup>S</sup>							
16								S	2.2 <sup>H</sup>	2.5 <sup>H</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.0 <sup>H</sup>	1.7 <sup>H</sup>							
17								S	(2.1) <sup>A</sup>	2.5 <sup>H</sup>	2.6 <sup>H</sup>	A	A	2.5 <sup>H</sup>	2.2 <sup>H</sup>	A								
18								S	2.2 <sup>H</sup>	2.5 <sup>H</sup>	2.6 <sup>H</sup>	2.8 <sup>H</sup>	2.5 <sup>H</sup>	2.4 <sup>H</sup>	2.2 <sup>H</sup>	(1.4) <sup>H</sup>								
19								S	2.0 <sup>H</sup>	2.2 <sup>H</sup>	2.3 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.1 <sup>H</sup>	(1.7) <sup>S</sup>								
20								S	2.0 <sup>H</sup>	2.3 <sup>H</sup>	2.4 <sup>H</sup>	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.4 <sup>H</sup>	A	S								
21								S	2.1 <sup>H</sup>	A	A	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.5 <sup>H</sup>	A	A	A							
22								1.8 <sup>H</sup>	A	A	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	2.6 <sup>H</sup>	2.2 <sup>H</sup>	(2.1) <sup>P</sup>	S							
23								S	2.1 <sup>H</sup>	2.4 <sup>H</sup>	(2.6) <sup>P</sup>	2.8 <sup>H</sup>	2.6 <sup>H</sup>	2.4 <sup>H</sup>	2.2 <sup>H</sup>	S								
24								S	A	2.5 <sup>H</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.5 <sup>H</sup>	(2.2) <sup>A</sup>	1.4 <sup>H</sup>							
25								S	A	2.5 <sup>H</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	2.5 <sup>H</sup>	2.4 <sup>H</sup>	A								
26								S	A	A	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	(2.5) <sup>A</sup>	2.3 <sup>H</sup>	1.4 <sup>H</sup>							
27								A	2.2 <sup>H</sup>	(2.5) <sup>A</sup>	(2.6) <sup>P</sup>	(2.7) <sup>P</sup>	(2.5) <sup>P</sup>	(2.3) <sup>P</sup>	(2.0) <sup>A</sup>	1.7 <sup>H</sup>								
28								S	1.7 <sup>H</sup>	2.1 <sup>H</sup>	(2.3) <sup>P</sup>	(2.3) <sup>P</sup>	(2.3) <sup>P</sup>	2.5 <sup>H</sup>	(2.4) <sup>P</sup>	A								
29								S	2.2 <sup>H</sup>	(2.3) <sup>P</sup>	2.4 <sup>H</sup>	2.8 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	(2.3) <sup>A</sup>	2.3 <sup>H</sup>	1.8 <sup>H</sup>							
30								S	2.2 <sup>H</sup>	2.6 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.7 <sup>H</sup>	2.6 <sup>H</sup>	(2.4) <sup>S</sup>	1.8 <sup>H</sup>							
31								1.8 <sup>H</sup>	(2.3) <sup>P</sup>	2.6 <sup>H</sup>	2.8 <sup>H</sup>	2.8 <sup>H</sup>	2.8 <sup>H</sup>	2.8 <sup>H</sup>	(2.6) <sup>H</sup>	A	A							
Median								1.8	2.2	2.5	2.7	2.7	2.7	2.7	2.5	2.2	1.8							
Count								7	22	25	27	27	27	27	20	12								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min  
Manual ☐ Automatic ☒

U<sub>h</sub>, 60



TABLE 80

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

National Bureau of Standards  
(Institution)  
Scaled by: E. J. W., J. W. P., J. J. S.

Observed at: Washington, D. C.,  
Dec 54  
(Month)  
Lat 38.7°N, Long 77.1°W  
Calculated by: E. J. W., J. W. P., J. J. S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	40 110	40 140	E	E	E	23 130	36 110	E	30 130	38 130	38 120	30 120	37 100	39 100	G	25 130	18 100	E	E	E	28 110	32 110	25 110	31 110
2	48 100	E	E	E	E	E	E	E	30 110	30 110	30 110	34 110	36 110	33 100	G	25 130	18 100	(50) 110	23 110	22 100	E	E	28 120	21 110
3	E	E	21 110	E	E	E	58 110	21 100	G	G	39 130	28 120	G	25 130	G	(31) 110	22 110	23 110	E	25 110	38 110	42 110	47 110	35 110
4	40 110	34 110	34 110	25 110	31 110	72 120	47 110	45 110	G	G	46 110	42 110	43 100	45 100	43 100	44 100	31 100	31 100	31 100	47 100	41 100	41 100	47 100	29 100
5	28 100	E	E	E	30 110	30 120	E	E	48 110	G	34 100	34 100	35 100	38 100	28 110	43 100	24 100	32 110	45 120	38 110	35 110	(37) 110	31 110	37 110
6	E	E	E	E	E	E	E	E	42 110	34 110	42 120	47 120	39 100	76 110	27 100	36 100	66 100	40 100	36 100	E	25 110	37 100	36 100	48 100
7	32 100	43 100	24 100	28 100	E	28 120	70 110	30 100	18 120	34 110	30 120	30 120	G	G	19 100	51 100	29 120	E	34 110	31 110	32 100	E	E	30 100
8	E	E	E	E	E	E	E	31 110	G	G	G	G	G	39 140	40 140	35 120	20 120	59 110	E	E	30 110	E	E	E
9	E	E	E	E	E	E	E	24 110	37 110	30 120	G	36 100	62 110	40 130	38 120	37 110	30 110	E	43 100	75 100	56 100	40 100	25 100	24 100
10	25 100	26 100	28 100	E	19 100	18 100	E	36 100	31 100	32 100	28 100	31 130	40 100	40 100	34 120	39 120	24 130	E	23 120	31 110	E	E	E	E
11	E	E	23 100	19 100	30 110	31 100	36 100	34 100	12 100	32 120	88 120	32 100	G	45 100	G	48 120	G	E	E	E	22 120	24 130	24 120	24 120
12	35 110	30 100	30 100	E	E	E	E	40 110	48 110	41 130	25 130	41 120	43 120	62 110	49 120	47 120	56 110	27 110	E	31 150	37 130	38 140	E	35 110
13	E	23 100	E	E	E	40 120	50 110	70 110	35 110	45 110	35 110	G	G	G	G	G	30 120	25 100	E	29 110	24 110	24 110	30 100	30 100
14	30 100	27 100	28 120	28 100	E	E	E	41 100	30 110	38 110	34 110	40 100	36 110	46 110	62 100	50 110	54 110	41 120	85 110	49 110	50 110	45 110	51 110	64 100
15	44 110	29 110	60 110	44 100	E	23 130	E	42 110	66 110	37 110	43 110	48 100	45 100	37 40	35 140	G	G	43 100	28 100	E	E	E	21 100	E
16	E	E	E	E	E	E	E	E	25 130	31 110	G	33 110	40 110	26 110	G	27 140	G	48 120	E	E	E	39 120	E	E
17	E	E	E	E	E	30 110	33 100	25 100	G	27 130	G	70 140	31 110	25 110	G	G	21 100	E	E	32 110	29 110	27 110	21 110	E
18	29 110	28 110	E	E	E	E	E	24 110	31 110	110	120	G	G	45 110	G	23 130	66 120	29 110	34 120	24 110	E	28 110	24 100	E
19	E	40 110	24 110	E	23 120	24 110	24 110	31 100	33 110	29 110	40 130	46 110	38 120	37 120	38 120	45 120	17 120	24 110	E	E	E	24 140	(28) 130	E
20	E	24 120	E	E	E	E	E	E	G	45 130	37 100	39 100	41 100	76 100	37 110	23 110	31 100	20 120	45 100	58 110	E	25 100	30 100	38 110
21	32 110	E	E	E	29 110	22 110	24 110	24 110	72 110	31 110	32 100	47 100	29 140	36 120	34 110	49 110	18 110	23 100	E	E	E	E	27 100	25 100
22	24 100	32 100	27 110	E	22 120	E	47 120	E	56 110	G	G	72 100	G	G	29 130	36 110	18 110	24 100	25 100	37 100	E	E	E	E
23	E	31 120	E	E	48 110	49 110	22 110	31 100	41 100	48 100	G	G	G	G	44 120	20 110	G	24 130	38 110	38 110	34 110	33 110	33 110	E
24	41 110	31 110	23 110	29 110	23 110	23 110	31 110	E	38 110	22 120	39 120	29 130	35 110	27 110	24 110	G	22 110	23 110	44 100	41 100	48 100	38 100	38 100	E
25	E	E	E	E	30 110	31 110	27 110	48 100	76 110	42 100	40 110	20 110	G	G	35 100	G	G	E	37 110	27 110	35 110	E	25 110	E
26	E	23 110	25 110	E	E	E	E	E	47 110	G	25 110	27 120	25 110	28 110	37 110	27 110	20 120	32 110	50 110	48 110	39 110	35 110	44 110	30 120
27	E	E	E	E	21 110	28 110	24 110	30 110	29 100	38 110	39 110	35 110	27 110	49 110	36 110	36 110	30 110	23 130	E	E	E	E	E	28 110
28	E	E	E	E	45 120	E	22 110	30 110	G	39 110	40 110	34 110	27 110	45 120	50 110	G	G	E	33 110	E	74 110	45 110	33 110	30 110
29	E	29 110	32 110	29 110	28 110	E	E	E	G	37 100	G	42 100	40 100	45 120	44 110	44 110	32 120	E	E	40 110	40 110	28 110	30 110	E
30	E	24 110	24 110	23 110	E	E	E	E	G	70 110	30 110	31 100	G	52 110	24 120	33 100	50 110	44 100	45 100	37 100	33 100	26 100	27 100	35 100
31	29 110	24 110	23 110	E	E	E	E	E	G	70 110	30 110	31 100	G	52 110	24 120	33 100	50 110	44 100	45 100	37 100	33 100	26 100	27 100	35 100
Median	**	23	**	**	**	**	**	22	31	31	34	33	30	37	34	35	24	27	25	29	29	27	25	25
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31

\* \* MEDIAN FES LESS THAN MEDIAN FES, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

Sweep 10 Mc to 25.0 Mc in 0.25 min  
Manual ☐ Automatic ☒

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

NBS-D-3  
Form adopted June 1946

(M1500)F2, December, 1954  
(Characteristics) (Month)

National Bureau of Standards  
(Institution)

Observed at Washington, D C

Scaled by E J W, J W P, J J S.

Lat 38.7°N Long 77.1°W

75°W Mean Time

Calculated by E J W, J W P, J J S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
3	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
4	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
5	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
6	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
7	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
8	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
9	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
10	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
11	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
12	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
13	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
14	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
15	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
16	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
17	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
18	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
19	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
20	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
21	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
22	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
23	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
24	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
25	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
26	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
27	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
28	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
29	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
30	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
31	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2
Mean	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2	2 2

GP: 81 460 85 Sweep 1.0 Mc to 25.0 Mc in 0.25 min Manual ☐ Automatic ☒

TABLE 82

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

(M3000)F2, (Unit) December, 1954

Observed at Washington, D. C.

## IONOSPHERIC DATA

National Bureau of Standards

(Institution)

Scoted by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A	(3.3) F	3.4 F	3.5 F	3.4 F	3.3 F	3.3 F	3.4	3.8	3.7	3.7	3.7	3.7	3.5 F	3.4	3.6	3.7	3.4	3.3 F	3.3	3.4	3.3 F	3.2 F	2.3
2	3.0 F	3.0 F	3.2 F	3.3 F	3.2 F	3.2 F	3.4	(3.3) F	3.7	3.6	3.7	3.6	3.7	3.5	3.4	3.6	3.5	3.5	3.3 F	3.3	3.3 F	3.4 F	3.3	3.0 F
3	3.1 F	(3.3) F	3.3 F	3.3 F	3.4	3.4 F	3.4 F	3.6 F	3.6	3.7	3.5 F	3.5	3.7	3.3	(3.5) F	3.4	3.5	3.6	3.4	3.3 F	(3.2) A	(3.5) A	(2.4) A	
4	3.0 F	A	3.2 F	(3.2) F	3.5 F	3.4 F	(3.5) F	3.6 F	3.7	3.7	3.6	3.5	3.4	3.5	3.6	3.5	3.5	3.5	4.1	3.4 F	A	A	3.1 F	
5	3.1 F	3.2	3.2	3.2	3.3	(3.6) F	(3.5) F	3.6 F	3.6	3.5	3.7	3.5	3.4	3.5	3.6	3.3	3.4	3.5	3.3	3.6 F	3.4 F	3.4 F	3.2 F	
6	3.2 F	3.2 F	3.2 F	3.1 F	3.2 F	3.2 F	3.3 F	3.4	3.6	3.5	3.6	(3.2) F	3.5	3.5	3.6	3.6	(3.3) F	(3.7) F	(3.4) F	3.3 F	3.2 F	3.4 F	A	
7	(3.1) F	A	3.0 F	3.0 F	3.0 F	3.1 F	3.1 F	3.4	(3.7) F	3.8	(3.5) F	3.5	3.1 F	3.4	3.5	3.4	3.4	3.5	3.4	3.3	3.3	3.3	3.1 F	3.2 F
8	(3.2) F	(3.2) F	(3.2) F	(3.2) F	3.4	3.5	3.1	3.4	3.6	3.5	3.6	3.4	3.6	3.5	3.3	3.5	3.4	3.5	3.3	3.3 F	3.2 F	3.2 F	3.2 F	
9	(3.2) F	(3.2) F	(3.2) F	3.1 F	(3.3) F	3.2 F	3.2 F	3.4	3.4	3.6	3.7	3.6	3.6	3.6	3.4	3.5	3.5	3.6	3.2 F	3.2 F	A	A	3.0	(3.1) F
10	(3.0) F	3.1 F	3.2 F	3.4 F	3.3 F	3.3 F	3.2 F	3.3 F	(3.7) F	3.7	(3.6) F	3.4	3.5	3.5	3.6	3.5	3.6	3.5	3.2	3.4 F	3.1	(3.0) F	(3.0) F	
11	(3.2) F	(3.1) F	(3.1) F	3.1 F	3.2 F	3.0 F	(3.1) F	3.2 F	3.8	(3.6) F	(3.4) F	3.6	3.6	3.7	3.5	3.7	3.6	3.7	(3.5) F	3.3 F	3.3	(2.4) F	2.9 F	3.1
12	3.2 F	3.2	(3.0) F	3.1 F	3.3	3.3 F	3.4 F	3.4 F	3.6	3.6	3.6	3.6	3.4	3.4	3.4	3.5	3.6	3.7	3.3	3.3 F	3.3 F	3.2 F	3.2 F	
13	(3.2) F	(3.2) F	(3.2) F	3.3 F	3.3 F	3.4 F	3.3 F	3.4 F	3.6	3.6	3.6	3.6	3.7	3.6	3.4	3.6	3.5	3.6	3.3	3.3 F	3.3 F	3.2 F	3.1 F	3.2 F
14	3.4 F	3.2 F	3.3 F	3.1 F	3.2 F	3.3 F	3.3 F	3.4 F	3.7	3.8	3.5 F	3.6	3.4 F	3.6	3.4	(3.6) F	(3.4) F	3.7	3.4 F	(3.4) F	(3.2) F	3.2 F	3.1 F	A
15	3.2	3.2 F	3.1 F	(3.2) F	3.2 F	3.3 F	3.4 F	3.4 F	3.8	3.4 F	3.5 F	2.6	3.7	3.4	3.6	3.5	3.6	3.5	3.3	3.3	(3.2) F	(3.5) F	3.2 F	2.3
16	3.2 F	(3.2) F	3.2 F	3.1 F	3.3 F	3.6	3.5 F	3.6	3.5	3.4	(3.5) F	2.5	(3.7) F	(3.5) F	3.6	3.5	(3.4) F	3.4	(3.5) F	3.3	3.3 F	3.0 F	3.1 F	3.0
17	3.1 F	(3.1) F	3.2 F	3.1 F	3.0 F	3.2 F	3.4 F	3.4 F	3.4 F	3.5	3.3	3.2	2.9	3.2	3.3	3.4	(3.4) F	3.4	(3.1) F	(3.2) F	(3.3) F	(3.0) F	(3.0) F	
18	(3.1) F	(3.0) F	2.0	3.2	3.4 F	3.4 F	3.4 F	3.2	3.5	3.7	3.6	3.5	3.5	3.5	3.6	(3.5) F	(3.6) F	3.4	3.5	3.3	3.3	3.0	S	S
19	S	(2.8) F	(3.0) F	F	J F	(3.2) F	(3.2) F	3.5 F	3.6	3.5	3.6	3.2	(3.4) F	3.3	3.7	3.3	3.5	3.6	(3.5) F	3.5 F	3.3 F	3.3 F	3.4 F	(3.1) F
20	3.3 F	(3.2) F	3.1 F	3.5 F	3.4 F	3.5 F	3.4 F	3.4	3.6	3.5	3.4	3.4	3.5	3.5	3.7	3.3	3.5	3.5	3.4	3.6 F	3.3 F	3.3 F	3.3 F	3.0 F
21	3.2 F	(3.2) F	(2.7) F	(3.3) F	3.2 F	3.3 F	3.5 F	3.4 F	3.7	3.6 F	3.7	3.6	3.5 F	3.5 F	(3.4) F	3.5 F	3.5 F	3.7	(3.6) F	(3.1) F	(3.0) F	A	A	
22	A	(3.0) F	(3.1) F	3.2 F	3.4 F	3.4 F	(3.3) F	3.4 F	3.7	3.8	3.4	3.7	3.4	3.4	3.4	3.6	3.7	3.6	3.5	3.5	3.0	3.1	3.1	3.3 F
23	3.3	A	3.2 F	3.4 F	3.2 F	3.4 F	3.5 F	3.2 F	3.7	2.6	3.3	3.5	2.5	3.4 F	3.5	3.6	3.4	3.5	(3.5) F	3.2 F	3.2	3.3	3.1	3.1
24	3.0 F	3.1 F	(3.1) F	(3.2) F	(3.2) F	(3.2) F	(3.5) F	(3.2) F	3.6 F	3.6 F	3.7	3.7	3.5	3.6	3.6	3.6	3.6	3.5	(3.5) F	(3.5) F	(3.3) F	3.1	3.3 F	
25	(3.0) F	(3.1) F	(3.1) F	3.3 F	3.1 F	3.3 F	3.4 F	3.4	3.8	3.5	3.6	2.5	3.5	3.5	3.7	3.5	3.6	3.4	3.5	A	A	A	(3.0) F	
26	(3.0) F	3.2 F	3.2 F	(3.2) F	3.4 F	3.4 F	3.3 F	3.2 F	3.5	A	3.6	(3.4) F	3.5	3.5	3.5	3.6	3.6	3.4	3.5	3.2	3.0	3.1 F	3.2 F	3.0 F
27	3.1 F	3.2	3.2	3.4	3.1	3.1 F	3.1 F	3.2	3.4	3.3	2.1	3.4	3.4	3.5	3.5	3.5	3.4	3.5	3.1	3.4	3.4	3.4	(3.3) A	3.1
28	3.0 F	3.2	3.2	3.3	3.5	3.1 F	3.1 F	3.2	3.4	3.5	3.6	3.6	3.6	(3.6) F	3.6	3.6	3.6	3.3	3.2	3.5	3.6 F	(3.2) F	3.2 F	3.1 F
29	3.1	(3.1) F	3.2 F	3.3	3.5	3.2	(3.2) F	(3.2) F	3.5	3.5	3.4	3.7	3.7	3.5	3.4	3.5	3.5	3.3	3.5	3.5	3.4	(3.4) F	3.3 F	3.1 F
30	3.2 F	3.3 F	3.3 F	3.4 F	3.3 F	3.3 F	3.4 F	3.2 F	3.4	3.5	3.6	3.7	3.6	3.6	3.6	3.5	3.6	3.4	3.6 F	3.5 F	3.1	3.0 F	3.1 F	3.1 F
31	3.2 F	3.1 F	3.1 F	3.2 F	3.3 F	3.3 F	3.1 F	3.2 F	3.6	3.6	3.6	2.7	3.6	3.5	3.5	3.6	3.5	3.5	(3.5) F	3.3 F	3.2 F	3.1 F	3.1 F	
Median	3.15	(3.2)	3.2	3.2	3.3	3.3	3.4	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.5	3.3	3.2	3.2	3.1
Count	28	28	31	30	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	30	28	25	25	21

04.60

Sweep 1.0 Mc to 2.5 Mc in 0.25 min

Manual ☐ Automatic ☒

(M3000)FI, (Unit) December, 1954

(Month)

Observed at Washington, D. C.

IONOSPHERIC DATA

National Bureau of Standards

(Institution)

Scaled by E.J.W., J.W.P., J.J.S.

Calculated by E.J.W., J.W.P., J.J.S.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
2									Q	A	L	L	A	L	L	L	Q							
3									Q	L	L	L	(4.0) <sup>L</sup>	L	L	L	Q							
4									Q	L	L	L	L	L	L	L	L							
5									A	L	L	L	L	L	(3.8) <sup>L</sup>	L	Q							
6									Q	L	L	L	L	(3.8) <sup>L</sup>	L	L	A							
7									Q	L	L	L	L	4.1	(3.8) <sup>H</sup>	L	L							
8									Q	L	L	L	L	L	L	L	Q							
9									Q	L	L	L	L	L	L	L	L							
10									Q	L	L	L	L	L	L	A	Q							
11									A	L	L	L	L	L	L	L	Q							
12									Q	A	L	L	L	A	L	A	Q							
13									Q	L	L	L	(3.8) <sup>L</sup>	L	L	L	Q							
14									Q	A	4.2	(3.4) <sup>H</sup>	A	L	L	L	Q							
15									A	Q	L	L	L	L	L	L	Q							
16									Q	L	3.7	3.7	L	L	L	L	Q							
17									Q	L	L	(3.8) <sup>L</sup>	(3.9) <sup>L</sup>	3.7	3.6	L	L							
18									Q	L	L	L	L	L	L	L	L							
19									L	4.1	L	(4.0) <sup>L</sup>	L	L	L	A	Q							
20									Q	L	L	L	L	(3.4) <sup>L</sup>	3.9	L	Q							
21									Q	Q	L	(3.5) <sup>F</sup>	L	A	(3.4) <sup>L</sup>	L	Q							
22									Q	L	L	L	L	L	L	L	L							
23									Q	L	L	3.8	L	L	L	L	L							
24									Q	L	L	(3.4) <sup>L</sup>	L	L	L	L	Q							
25									Q	L	L	(3.4) <sup>L</sup>	L	L	L	L	Q							
26									Q	A	(3.7) <sup>L</sup>	L	(3.4) <sup>L</sup>	(4.0) <sup>L</sup>	L	L	L							
27									Q	L	(3.7) <sup>L</sup>	3.7	L	L	L	L	L							
28									Q	L	L	(3.4) <sup>L</sup>	(3.4) <sup>L</sup>	L	L	L	Q							
29									Q	L	L	3.9	4.1	(4.0) <sup>L</sup>	L	L	Q							
30									Q	L	(3.8) <sup>L</sup>	(3.4) <sup>L</sup>	L	L	L	L	Q							
31									Q	L	L	(3.4) <sup>L</sup>	L	L	L	L	Q							
Median Count									—	—	3.7	(3.9)	(4.0)	(4.0)	(3.8)	—	—							

04.00

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒



TABLE 84

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

(M1500)E, (Unit) December, 1954

(Month)

(Year)

(Time)

(Frequency)

(Observer)

Washington, D.C.

38.7°N

Long 77.1°W

NBS - D-3  
Form adopted June 1946

National Bureau of Standards

(Institution)

Scaled by: E.J.W., J.W.P., J.J.S.

Calculated by: E.J.W., J.W.P., J.J.S.

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									43	44	44	43	R	R	43	44	(44)P							
2									43	44	44	44	(44)R	44	45	45	45							
3									42	43	45	44	42	44	44	44	R							
4									(42)S	(45)S	R	R	R	R	R	R	R							
5									R	42	43	42	43	42	43	44	S							
6									43	44	43	43	R	R	R	R	R							
7									R	R	R	44	43	44	43	R	R							
8									S	43	43	43	43	43	43	44	44							
9									S	R	43	44	44	44	44	44	S							
10									S	R	42	42	R	42	43	R	R							
11									R	42	44	44	43	44	44	R	F							
12									R	41	41	42	42	42	42	42	S							
13									S	R	45	45	45	43	44	44	S							
14									R	44	R	(41)R	R	(44)R	R	R	S							
15									S	R	R	44	44	43	45	45	(43)S							
16									S	44	44	43	R	43	44	44	44							
17									S	(42)R	43	44	R	R	41	43	R							
18									S	42	42	42	41	43	43	42	(42)H							
19									S	44	44	44	45	43	44	44	(45)S							
20									S	44	44	43	43	44	44	R	S							
21									S	44	R	R	44	44	R	R	R							
22									42	R	R	42	42	43	44	(43)P	S							
23									S	43	43	(43)P	43	43	44	43	S							
24									S	R	43	44	43	43	43	R	43							
25									S	R	43	44	43	R	42	42	R							
26									S	R	R	44	43	44	R	43	44							
27									R	44	(45)R	(44)P	(44)P	(44)P	(44)P	R	45							
28									S	46	45	(44)P	(45)P	45	44	R	R							
29									S	44	43	44	43	44	R	45	43							
30									S	42	42	43	44	44	42	(43)S	44							
31									42	(43)P	42	42	42	R	(42)P	R	R							
Median									42	43	43	44	43	44	44	44	44							
Count									7	22	24	29	34	35	35	18	12							

04.60

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 85Ionospheric Storminess at Washington, D. C.December 1954

Day	Ionospheric character*		Principal storms		Geomagnetic character**	
	00-12 GCT	12-24 GCT	Beginning GCT	End GCT	00-12 GCT	12-24 GCT
1	1	2			2	1
2	2	2			2	2
3	2	1			2	1
4	3	1			1	1
5	1	2			1	1
6	1	2			2	1
7	2	2			3	2
8	1	2			2	1
9	3	2			2	1
10	2	2			2	1
11	1	2			0	1
12	3	1			2	2
13	1	1			2	1
14	1	2			1	1
15	2	1			0	0
16	2	2			0	0
17	3	3			3	3
18	1	2			3	2
19	3	2			2	2
20	2	2			3	3
21	3	1			1	2
22	2	2			2	0
23	2	3			2	1
24	2	2			1	1
25	2	2			1	1
26	1	2			1	1
27	0	3			3	4
28	1	1			2	1
29	3	2			2	1
30	2	2			2	1
31	2	2			2	1

\*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

\*\*Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

Table 86

## Radio Propagation Quality Figures

(Including Comparisons with Short-Term and Advance Forecasts)

November 1954

Day	North Pacific 9-hourly quality figures			Short-term fore- casts issued at			Whole day quality index	Advance forecasts (Jp reports) for whole day; issued in advance by:		
	03 to 12	09 to 18	18 to 03	02	09	18		1-4 days	4-7 days	8-25 days
1	6	5	5	5	5	6	6	6	5	
2	(4)	(4)	6	(4)	(4)	5	5	5	5	
3	5	(4)	7	5	(4)	6	5	5	5	
4	5	5	7	5	5	6	6	6	6	
5	6	5	6	5	5	7	6	7	6	
6	6	5	7	5	5	6	6	7	7	
7	5	5	6	5	5	6	6	6	6	
8	5	5	6	6	5	6	6	6	6	
9	5	5	(4)	5	5	7	5	6	6	
10	6	5	6	6	5	7	6	7	7	
11	6	5	7	6	6	7	6	7	7	
12	6	6	6	7	6	7	6	6	6	
13	6	6	6	6	5	6	6	6	6	
14	6	6	6	6	5	6	6	5	5	
15	6	6	7	6	6	7	7	5	5	
16	6	6	6	6	6	7	6	6	5	
17	7	6	7	7	6	7	7	6	6	
18	6	6	7	6	6	7	6	6	5	
19	5	5	6	6	6	5	6	5	5	
20	6	5	6	5	5	6	6	5	(4)	X
21	6	6	6	5	5	6	6	(4)	(4)	X
22	6	7	7	6	5	6	7	(4)	(4)	X
23	6	5	6	6	5	6	6	5	5	
24	6	5	6	6	5	6	6	6	6	
25	5	5	5	6	5	6	6	6	6	
26	5	5	7	6	5	6	5	5	5	
27	6	6	6	6	6	6	7	5	5	
28	7	5	6	6	6	7	6	(4)	(4)	
29	5	6	6	6	6	6	6	(4)	(4)	
30	6	5	6	6	6	6	6	5	5	

Score:

Quiet Periods	P	17	20	16	14	12
	S	12	7	13	10	11
	U	0	1	0	2	2
	F	0	0	0	4	5
Disturbed Periods	P	1	2	0	0	0
	S	0	0	0	0	0
	U	0	0	0	0	0
	F	0	0	1	0	0

Scales.

Q-scale of Radio Propagation Quality

- (1) - useless
- (2) - very poor
- (3) - poor
- (4) - poor to fair
- 5 - fair
- 6 - fair to good
- 7 - good
- 8 - very good
- 9 - excellent

Scoring: (beginning October 1952)

- P - Perfect: forecast quality equal to observed
- S - Satisfactory: (beginning October 1952)  
forecast quality one grade different  
from observed
- U - Unsatisfactory: forecast quality two or more  
grades different from observed when both  
forecast and observed were  $\geq 5$ , or both  $\leq 5$
- F - Failure: other times when forecast quality  
two or more grades different from observed

Symbols:

X - probable disturbed date

Note: All times are UT (Universal Time or GCT)

Table 87a

## Radio Propagation Quality Figures

(Including Comparisons with Short-Term and Advance Forecasts)

November 1954

Day	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day quality index	Advance forecasts (J-reports) for whole day; issued in advance by:			Geomag- netic K <sub>Ch</sub>	
	00 to 06	06 to 12	12 to 18	18 to 24	00 to 06	06 to 12	12 to 18	18 to 24		1-4 days	4-7 days	8-25 days	Half Day (1) (2)	
1	5	(4)	6	5	5	(4)	6	6	5	5			(4)	(4)
2	(3)	(4)	6	5	(4)	(3)	6	5	(4)	5	6		(4)	3
3	(4)	(4)	7	6	(3)	(4)	6	6	5	6	6		(4)	2
4	(4)	5	6	5	5	(4)	7	6	5	6	6		2	1
5	5	(4)	6	6	5	5	7	6	5	6	6		3	1
6	6	5	6	6	5	5	7	6	6	6	6		2	1
7	6	5	7	6	5	5	7	7	6	7	7		2	1
8	6	6	7	6	6	5	7	6	6	7	7		1	1
9	6	5	7	6	6	6	7	7	6	7	7		2	2
10	6	6	7	6	6	5	6	7	6	7	7		1	0
11	5	6	7	7	6	5	7	7	6	7	6		2	1
12	5	6	7	7	6	5	7	7	6	6	6		2	2
13	6	6	7	7	5	6	7	7	6	6	6		1	2
14	6	6	7	7	6	6	7	7	6	6	6		2	2
15	6	6	7	6	6	6	7	7	6	6	6		0	0
16	6	6	7	7	6	6	7	7	7	7	6		0	0
17	7	6	7	7	6	6	7	7	7	7	6		1	1
18	7	6	7	7	6	6	7	7	7	7	6		1	2
19	7	6	7	6	6	6	7	7	7	6	6		2	2
20	7	6	7	6	6	6	7	6	7	(4)	(4)	X	3	2
21	6	6	7	6	6	5	6	6	6	(4)	(4)	X	3	2
22	6	5	6	6	6	6	5	6	6	(4)	(4)	X	3	1
23	5	5	6	6	(4)	(3)	6	6	6	6	(4)	X	2	3
24	5	5	6	6	5	(4)	7	6	5	6	5		2	1
25	5	6	6	6	5	5	7	6	6	5	5		2	2
26	6	6	7	7	6	6	7	6	6	6	5		2	2
27	6	5	7	6	5	5	6	6	6	(4)	(4)	X	2	2
28	6	6	7	6	5	5	7	6	6	(4)	(4)	X	1	2
29	7	6	7	7	6	6	7	6	7	(4)	(4)	X	1	3
30	6	5	7	6	5	(4)	7	6	6	6	5		3	2

Score:

Quiet Periods	P	13	13	20	21	13	7
	S	14	12	10	9	10	15
	U	0	1	0	0	0	0
	F	0	0	0	0	6	7
Disturbed Periods	P	0	2	0	0	0	0
	S	3	2	0	0	1	0
	U	0	0	0	0	0	0
	F	0	0	0	0	0	0

## Scales:

## Q-scale of Radio Propagation Quality

- (1) - useless
- (2) - very poor
- (3) - poor
- (4) - poor to fair
- 5 - fair
- 6 - fair to good
- 7 - good
- 8 - very good
- 9 - excellent

## K-scale of Geomagnetic Activity

0 to 9, 9 representing the greatest disturbance; K<sub>Ch</sub> ≥ 4 indicates significant disturbance, enclosed in ( ) for emphasis

## Scoring: (beginning October 1952)

- P - Perfect: forecast quality equal to observed
- S - Satisfactory: (beginning October 1952) forecast quality one grade different from observed
- U - Unsatisfactory: forecast quality two or more grades different from observed when both forecast and observed were ≥ 5, or both ≤ 5
- F - Failure: other times when forecast quality two or more grades different from observed

## Symbols:

X - probable disturbed date

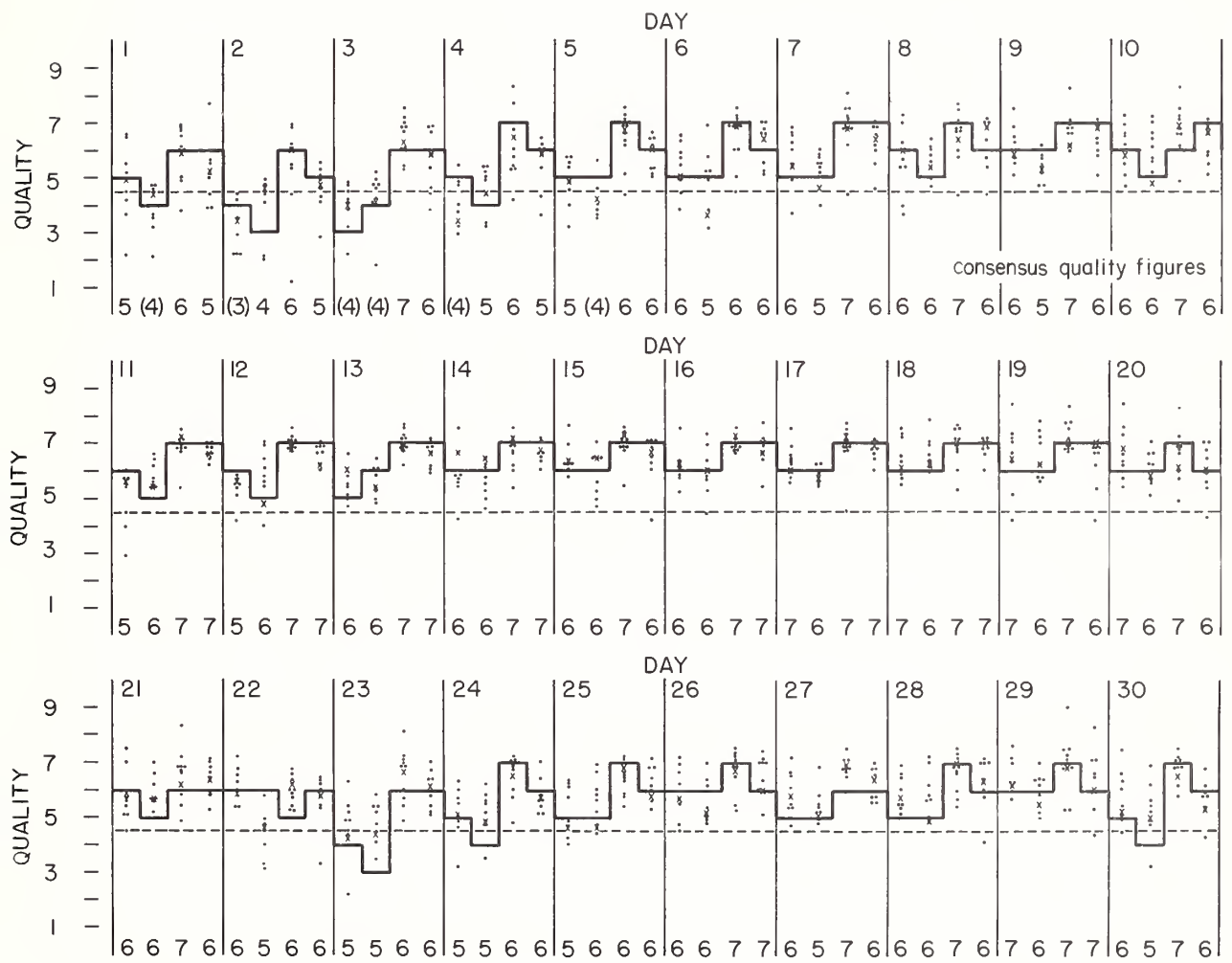
Note: All times are UT (Universal Time or GCT)



Table 87 b

Short-Term Forecasts — November 1954

— Forecast  
• Individual reports of quality (adjusted to CRPL scale)  
x CRPL observation (not in consensus)



Outcome of Advance Forecasts (1 to 4 Days Ahead) - November 1954

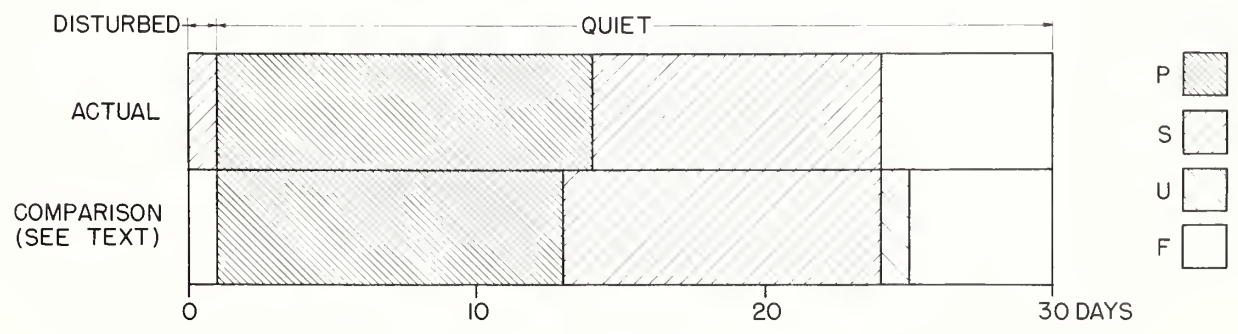


Table 88a

Coronal observations at Climax, Colorado (5303A), east limb

Date UT	Degrees north of the solar equator																	0°	Degrees south of the solar equator																			
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10		5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1954																																						
Dec 1.9a	-	-	-	-	-	1	1	2	2	4	3	2	2	1	-	-	-	-	-	-	-	-	1	2	3	10	4	1	-	-	-	-	-	-	-	-	-	
2.9	-	-	-	-	-	-	1	4	4	5	5	1	1	-	-	-	-	-	-	-	-	-	-	1	1	3	15	2	1	-	-	-	-	-	-	-	-	
3.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5.7	-	-	-	-	-	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	1	1	2	1	2	1	-	-	-	-	
6.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	1	1	-	-	-	-	-	-	-	-	-	
8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
9.7	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	1	1	-	-	-	-	-	-	-	-	-	
10.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	-	-		
11.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-		
12.7	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-		
13.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
14.9	-	-	-	-	-	-	-	-	1	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
17.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
18.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-		
19.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
21.7	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
22.7	-	-	-	-	-	-	-	-	1	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	
23.9	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
24.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
25.7	-	-	-	-	-	-	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
26.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
27.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
28.7	-	-	-	-	-	-	-	-	2	3	4	1	1	-	-	-	-	-	-	-	-	-	-	1	2	3	7	4	1	-	-	-	-	-	-	-		
29.7a	-	-	-	-	-	-	-	-	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X		
30.7	-	-	-	-	-	-	-	-	1	2	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1	2	4	7	5	2	1	-	-	-	-	-		
31.x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 89a

Coronal observations at Climax, Colorado (6374A), east limb

Date UT	Degrees north of the solar equator																	0°	Degrees south of the solar equator																				
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10		5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		
1954																																							
Dec 1.9a	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	2	2	3	2	2	2	2	1	1	1	6	5	1	1	1	1	1	1	1	1	1	1	1	
2.9	3	2	1	1	1	1	1	1	1	1	1	1	2	3	5	3	1	1	3	4	4	3	3	3	2	2	12	12	12	1	1	1	1	2	2	2	2	2	
3.x																																							
4.x																																							
5.7	2	1	1	1	1	1	1	1	1	1	1	1	4	6	8	5	5	4	5	5	5	6	5	4	3	2	2	1	1	1	1	1	1	1	2	2	2		
6.x																																							
7.8	2	2	1	1	1	1	1	2	2	3	3	3	4	5	5	6	6	6	5	5	5	4	3	2	2	3	3	3	2	1	1	1	1	1	2	2	2		
8.8	1	1	2	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1		
9.7	2	2	1	1	1	1	1	1	1	1	1	2	2	2	3	3	4	5	4	4	4	4	3	2	2	2	2	2	2	1	1	1	1	1	2	2	2		
10.7a	2	1	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2		
11.7a	1	-	-	-	-	-	-	-	-	-	1	2	2	2	2	2	2	3	3	3	2	3	3	2	1	3	2	1	1	1	1	1	1	1	1	2	2		
12.7	1	2	2	1	1	1	1	1	1	1	2	2	1	3	3	4	4	5	5	3	4	4	3	2	3	2	2	2	1	1	1	1	1	1	1	2	2		
13.x																																							
14.9	2	2	2	2	1	1	1	1	1	2	2	2	3	3	4	5	5	4	4	4	5	5	5	5	4	3	2	1	1	1	1	1	1	2	2	2			
15.x																																							
16.x																																							
17.x																																							
18.8	2	2	1	1	1	1	1	1	1	1	2	3	3	3	5	6	2	3	3	3	4	5	5	3	3	2	3	3	2	2	1	1	1	1	2	2	2		
19.8a	2	1	1	1	1	1	1	1	1	1	1	1	1	2	5	6	6	5	6	5	4	5	4	3	2	3	3	2	1	1	1	1	1	1	2	2	2		
20.7	2	2	2	1	1	1	1	1	1	2	3	3	3	4	6	6	9	10	9	8	7	5	5	4	3	3	3	2	1	1	1	1	1	2	2	2	2		
21.7	2	2	2	2	1	1	1	1	1	1	1	2	3	4	5	6	7	6	5	5	6	6	6	5	3	3	4	4	3	2	1	1	1	1	2	2	2		
22.7	2	2	2	2	1	1	1	1	1	1	2	3	5	6	6	6	6	6	5	6	7	7	5	3	3	3	2	2	1	1	1	1	1	2	3	3	3		
23.9	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3	5	5	5	5	3	3	2	1	1	1	1	1	1	1	1	1	1	2	2		
24.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-			
25.7	2	1	1	1	1	1	1	1	1	3	3	3	3	4	4	4	5	5	5	6	6	6	5	3	3	3	3	3	2	2	1	2	2	2	2	2	2		
26.x																																							
27.x																																							
28.7	2	2	1	1	1	1	1	1	1	1	1	3	5	5	5	4	3	3	3	3	4	4	2	1	1	3	2	1	1	1	1	1	1	1	1	2	2		
29.7a	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	2	2	2	2	2	2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
30.7	2	2	2	1	1	1	1	1	1	1	1	1	4	3	2	3	2	2	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	2	1	2	2		
31.x																																							



Date	Degrees north of the solar equator		Degrees south of the solar equator
UT	90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5	0°	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954			
Dec 1.9a			
2.9			
3.x			
4.x			
5.7			
6.x			
7.8			
8.8	The 6702A coronal line was not visible at the east limb on any of the observation dates in December;		
9.7	the position angles observed were the same as for the 5303A coronal line.		
10.7a			
11.7a			
12.7			
13.x			
14.9			
15.x			
16.x			
17.x			
18.8			
19.8a			
20.7			
21.7			
22.7			
23.9			
24.9a			
25.7			
26.x			
27.x			
28.7			
29.7a			
30.7			
31.x			

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[illegible]



Date	Degrees south of the solar equator		Degrees north of the solar equator
UT	90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5	0°	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
1954			
Dec 1.9a			
2.9			
3.x			
4.x			
5.7			
6.x			
7.8			
8.8	The 6702A coronal line was not visible at the west limb on any of the observation dates in December;		
9.7	the position angles observed were the same as for the 5803A coronal line.		
10.7a			
11.7			
12.7			
13.x			
14.9			
15.x			
16.x			
17.x			
18.8			
19.8			
20.7			
21.7			
22.7			
23.9			
24.9a			
25.7a			
26.x			
27.x			
28.7			
29.7a			
30.7			
31.x			

1991, 1992, 1993

Date UT		Degrees south of the solar equator																	0°	Degrees north of the solar equator																			
		90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1954																																							
Dec	1.8a	-	-	-	-	-	-	-	2	3	3	3	4	3	3	2	2	3	-	-	-	-	-	-	-	3	3	4	5	3	2	2	-	-	-	-	-	-	-
	2.8	-	-	-	-	-	-	2	2	2	2	3	3	3	3	2	3	3	2	2	3	2	3	3	3	3	2	3	3	2	-	-	-	-	-	-	-	-	
	3.x																																						
	4.x																																						
	5.7	-	-	-	-	-	-	-	2	2	3	4	3	3	2	2	2	-	-	-	-	2	2	2	3	3	2	2	3	3	2	-	-	-	-	-	-		
	6.7	-	-	-	-	-	-	-	-	-	-	2	3	3	2	-	-	-	-	-	-	2	3	4	5	4	3	3	2	2	-	-	-	-	-	-	-		
	7.7a	-	-	-	-	-	-	-	-	-	2	2	3	3	2	2	-	-	-	-	-	2	3	3	2	4	3	3	2	-	-	-	-	-	-	-	-		
	8.7	-	-	-	-	-	2	2	3	3	3	3	4	5	4	3	2	2	-	-	-	2	3	3	5	7	8	9	5	3	2	2	-	-	-	-	-	-	
	9.x																																						
	10.x																																						
	11.x																																						
	12.7a	-	-	-	-	-	2	2	2	3	3	4	4	4	4	3	3	3	4	2	2	2	3	3	4	5	10	13	10	8	4	3	2	-	-	-	-	-	
	13.9	-	-	-	-	-	2	2	4	6	12	14	10	9	8	5	3	3	2	-	-	-	2	3	7	11	16	20	17	10	4	3	3	2	-	-	-	-	-
	14.7	-	-	-	-	-	-	2	3	6	14	16	15	14	11	8	7	5	3	4	3	3	4	6	8	14	18	17	14	5	3	3	3	2	-	-	-	-	-
	15.7	-	-	-	-	-	2	5	8	7	8	14	20	19	16	6	4	3	2	2	2	3	4	5	6	7	11	15	14	14	13	4	3	2	-	-	-	-	-
	16.x																																						
	17.7	-	-	-	-	-	2	5	5	6	7	13	18	16	11	4	3	2	2	3	2	3	5	4	3	3	3	8	9	8	6	5							

Date		Degrees north of the solar equator																	0°	Degrees south of the solar equator																			
UT		90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
Dec 1954																																							
1.a	1.8a	4	4	4	3	3	2	2	3	3	2	3	4	7	8	14	11	12	13	14	13	14	12	11	10	11	4	8	28	26	2	3	-	-	-	-	-	-	-
2.8	2.8	4	5	3	2	2	3	2	-	-	3	4	4	6	14	11	8	9	11	12	12	11	5	5	6	5	6	18	19	5	3	2	-	2	2	2	3	3	
3.x	3.x																																						
4.x	4.x																																						
5.7	5.7	5	4	4	5	3	3	2	3	3	4	5	6	8	14	15	13	13	14	14	15	16	15	13	11	8	7	9	6	4	3	2	2	3	2	3	3	4	
6.7	6.7	4	3	4	4	3	3	2	3	3	4	5	7	10	10	11	12	12	14	13	13	12	11	7	4	3	4	4	5	4	3	4	4	3	4	3	3	4	
7.7a	7.7a	2	2	3	2	2	2	2	2	3	3	4	3	6	7	6	7	8	9	10	9	8	5	5	3	4	3	4	4	3	3	3	-	-	2	3	2	3	
8.7	8.7	5	6	5	3	2	2	2	3	5	4	5	6	6	7	9	14	13	14	16	17	14	8	7	5	4	3	7	8	6	4	3	2	3	3	4	5	4	
9.x	9.x																																						
10.x	10.x																																						
11.x	11.x																																						
12.7	12.7	3	4	5	3	4	3	2	-	2	3	4	5	4	3	3	4	5	6	7	8	8	9	8	8	7	5	5	5	4	3	3	2	2	3	2	3	4	
13.9	13.9	5	3	4	4	3	2	3	2	3	4	5	8	7	8	11	12	13	14	15	17	16	15	14	14	13	12	12	10	8	5	3	2	3	3	2	4	4	
14.7	14.7	5	5	4	4	3	2	2	3	3	3	4	5	6	7	9	12	13	13	14	14	15	14	14	13	12	11	8	4	3	5	3	4	2	4	3	4	5	
15.7	15.7	5	4	5	5	4	3	2	3	4	5	4	5	8	11	13	11	14	16	13	14	12	13	14	10	11													

Table 93a.

[illegible]

[illegible]

Table 95b

[illegible]

Table 94

## Particulars of Observations, Climax, Colorado

July - December 1954

Date GCT	Green line threshold intensity at						Obs.	Meas.	Date GCT	Green line threshold intensity at						Obs.	Meas.
	45°	90°	135°	225°	270°	315°				45°	90°	135°	225°	270°	315°		
1954																	
Jul. 1.6	7	8	6	7	8	8	H	B	Sep. 29.6	8	9	8	7	8	8	D	B
2.7	6	7	6	7	8	8	H	B	30.7	7	8	9	9	8	7	H	B
3.6	6	7	6	7	7	8	H	B	Oct. 1.6	6	6	6	6	7	7	H	B
4.7	10	13	10	11	11	10	H	B	2.6	13	11	15	8	9	-	H	B
5.6	5	5	4	5	5	5	H	B	4.6	6	6	6	6	7	7	H	B
6.7	8	8	10	10	7	8	H	B	5.6	6	7	7	7	7	7	I	B
10.7	7	8	8	6	6	5	H	B	6.7	6	5	5	7	8	9	I	B
12.7	7	6	6	6	4	6	H	B	7.7	5	5	6	7	6	7	H	B
13.6	7	7	7	8	8	-	H	B	9.0	4	4	4	6	4	5	H	B
19.6	5	4	4	6	6	6	H	B	10.7	4	4	5	5	5	5	H	B
20.7	7	6	4	6	4	5	H	B	11.6	2	2	2	3	3	4	H	B
21.6	6	6	11	4	5	5	H	B	12.8	5	5	5	5	5	5	A	B
24.0	5	6	5	4	3	5	H	B	14.6	2	3	3	3	4	3	H	B
25.6	-	4	4	-	3	5	H	B	15.7	2	2	2	2	2	2	H	B
26.6	6	5	5	4	5	5	H	B	16.6	2	3	2	2	2	2	H	B
27.8	5	5	6	5	4	-	H	B	17.7	1	2	2	2	2	2	H	B
28.7	5	5	5	6	6	5	H	B	19.7	4	4	3	7	7	7	D	B
29.7	6	5	4	7	6	6	H	B	20.8	5	5	5	-	-	-	D	B
30.7	6	6	7	7	6	6	H	B	21.7	4	4	5	5	5	4	D	B
31.9	7	9	8	7	8	6	H	B	22.7	2	2	2	1	1	2	D	B
Aug. 1.6	10	10	9	13	13	13	H	B	23.8	4	6	6	5	5	5	H	B
2.6	5	6	6	5	5	5	H	B	27.7	2	2	2	3	3	3	H	B
7.6	7	7	6	8	9	10	H	B	28.7	2	2	2	4	3	5	H	B
8.6	7	7	6	5	5	6	H	B	29.7	2	3	3	2	2	2	H	B
9.6	7	7	6	7	-	7	H	B	30.7	5	4	5	4	3	4	H	B
10.6	15	15	-	-	-	-	H	B	31.7	4	4	4	4	4	5	H	B
11.9	5	4	-	-	-	-	H	B	Nov. 1.7	2	3	4	5	3	3	H	B
12.6	-	6	5	-	-	-	H	B	2.7	5	4	4	7	7	6	D	B
13.8	3	3	3	3	3	3	H	B	4.7	5	3	7	5	7	5	D	B
14.6	5	5	6	4	4	3	H	B	6.7	5	4	4	2	3	2	D	B
15.6	-	-	-	-	-	9	H	B	7.7	3	4	4	3	3	3	H	B
16.6	4	4	4	4	4	4	H	B	9.6	4	6	8	8	9	9	H	B
17.6	7	7	7	6	6	5	H	B	10.7	5	6	6	4	5	5	H	B
18.6	8	7	6	7	8	8	H	B	12.7	6	6	6	5	5	5	H	B
19.6	8	9	9	7	8	7	D	B	14.6	2	3	2	2	3	3	H	B
20.6	7	7	5	6	6	7	D	B	15.7	3	3	3	3	3	3	H	B
21.6	8	8	8	6	6	5	D	B	17.9	-	-	-	-	-	4	H	B
22.7	5	5	5	6	6	5	D	B	19.8	-	7	8	-	7	7	D	B
23.6	5	5	6	5	5	5	D	B	20.7	5	4	4	3	3	3	H	B
25.6	6	6	6	5	5	4	D	B	21.8	4	-	5	4	4	5	H	B
26.7	5	5	4	6	5	7	D/H	B	22.7	4	4	4	4	4	4	H	B
27.6	8	7	6	9	9	9	H	B	23.7	2	3	3	3	3	3	H	B
28.7	8	8	8	8	8	8	H	B	25.7	3	3	4	3	4	5	H	B
29.7	9	9	11	9	8	8	H	B	26.8	9	9	10	7	8	9	D	B
30.7	10	8	10	10	10	10	H	B	Dec. 1.9	6	-	7	7	7	6	D	B
31.7	9	9	9	8	8	7	H	B	2.9	6	6	6	5	6	6	H	B
Sep. 1.7	9	9	8	11	11	14	H	B	5.7	5	5	5	5	4	4	H	B
2.7	10	8	11	11	13	12	D/H	B	7.8	5	5	4	5	5	5	D	B
3.6	7	9	13	15	-	-	H	B	8.9	6	8	6	6	7	8	D	B
6.6	6	6	6	7	10	-	H	B	9.7	2	1	2	3	3	3	D	B
9.0	-	4	9	-	4	4	H	B	10.7	5	5	7	7	-	-	D	B
9.6	3	5	5	4	4	4	H	B	11.7	7	5	5	5	4	5	D	B
10.6	5	5	6	5	5	5	H	B	12.7	5	3	4	4	4	4	D	B
11.6	6	-	6	7	8	8	H	B	14.9	5	4	3	3	4	5	V/D	B
13.8	-	3	-	-	-	-	H	B	18.8	4	4	4	4	4	4	D	B
14.6	4	4	3	4	5	5	H	B	19.8	4	2	2	3	3	3	A	B
15.6	5	5	5	5	5	5	H	B	20.7	3	4	4	3	3	4	D	B
16.8	8	8	8	9	8	8	D	B	21.7	5	3	2	2	5	2	A	B
17.6	-	8	8	7	8	7	H	B	22.7	4	5	5	4	4	4	D	B
18.7	5	6	6	8	10	9	D	B	23.9	5	5	5	5	5	5	A	B
19.7	6	6	5	5	5	4	H	B	24.9	11	9	-	11	8	10	D	B
20.7	7	9	13	13	13	9	D	B	25.7	4	4	4	5	4	4	D	B
21.7	6	7	7	9	8	11	H	B	28.7	1	1	2	2	2	2	A	B
22.6	8	10	9	7	7	8	D	B	29.7	7	-	-	-	-	-	D	B
25.7	5	5	5	5	5	5	H	B	30.7	2	2	2	3	4	5	A	B
28.7	5	5	4	6	5	5	I/D	B									

- No observation taken at position angle indicated.

S = sky  
 B = Billings  
 D = Dodson  
 I = Ingham



- 1955

## Particulars of Observations, Sacramento Peak, New Mexico

July - December 1954

Date GCT	Green line threshold intensity at								Obs.	Meas.	Date GCT	Green line threshold intensity at								Obs.	Meas.
	0°	45°	90°	135°	180°	225°	270°	315°				0°	45°	90°	135°	180°	225°	270°	315°		
1954																					
Jul. 3.7	10	9	10	11	-	-	-	-	R	Y	Oct. 12.7	6	5	6	6	6	6	6	6	S	Y
4.3	7	7	7	7	6	6	7	6	R	Y	12.8	4	4	4	4	4	3	3	3	DeM	Y
6.6	9	9	10	11	11	10	9	8	M	Y	14.7	7	5	5	6	7	6	6	6	R	Y
7.6	8	8	8	9	3	8	8	8	R	Y	15.6	6	6	5	6	6	6	6	6	S	Y
8.7	7	6	7	7	7	7	7	7	R	Y	16.6	5	4	4	5	5	4	4	3	DeM	Y
9.6	6	6	6	7	7	7	7	7	R	Y	17.7	7	6	7	6	7	6	6	6	S	Y
10.6	6	6	6	6	6	6	6	6	R	Y	18.7	5	4	5	5	6	5	5	5	R	Y
11.6	5	5	4	5	3	3	4	3	R	Y	19.7	7	7	6	6	7	7	7	7	R	Y
12.6	7	7	6	6	7	7	9	9	S	Y	20.6	5	5	5	5	5	5	5	5	R	Y
15.7	8	8	8	7	9	8	8	-	S	Y	21.7	6	6	6	6	6	5	5	5	S	Y
14.7	10	10	10	9	9	9	8	7	S	Y	22.7	8	8	8	9	9	8	9	8	S	Y
15.6	5	5	4	5	5	5	6	6	M	Y	23.7	9	8	8	8	9	8	9	8	S	Y
18.6	5	3	3	3	4	3	3	3	M	Y	24.7	9	9	-	8	8	9	9	11	DeM	Y
17.9	10	9	8	10	9	9	8	9	R	Y	26.7	3	3	3	3	3	4	3	3	DeM	Y
18.6	5	5	5	5	7	6	5	3	R	Y	28.7	4	4	4	4	4	4	4	3	R	Y
19.6	8	3	8	3	7	8	8	8	R	Y	30.7	4	4	4	5	5	5	3	5	R	Y
20.7	9	9	10	9	10	10	9	9	S	Y	31.7	7	7	7	8	7	7	7	7	S	Y
22.7	9	9	9	9	9	8	8	15	S	Y	Nov. 1.8	4	4	5	4	-	-	-	-	S	Y
25.9	4	5	5	9	6	5	4	4	M	Y	2.7	8	7	8	6	6	6	-	-	DeM	Y
24.9	8	7	7	7	8	7	9	10	M	Y	3.7	5	6	7	5	7	6	6	6	DeM	Y
26.8	10	9	9	9	10	9	9	8	R	Y	4.7	6	6	6	6	6	6	6	6	DeM	Y
27.7	11	11	11	11	11	11	11	11	R	Y	5.7	6	7	6	6	6	6	6	5	R	Y
Aug. 1.7	9	9	9	9	9	9	9	8	S	Y	6.0	4	5	5	5	5	5	5	5	S	Y
5.7	3	2	3	2	3	3	3	3	R	Y	7.7	6	6	7	7	6	7	7	6	R	Y
9.0	6	10	11	10	8	7	7	6	R	Y	8.7	10	11	10	10	10	9	9	8	S	Y
10.8	4	4	5	4	4	3	4	3	R	Y	9.7	11	9	9	9	9	8	9	10	S	Y
11.7	9	9	9	9	9	7	7	8	R	Y	10.7	8	8	8	9	8	9	9	8	S	Y
12.9	11	11	11	11	11	11	11	12	R	Y	12.7	3	3	3	2	3	3	3	3	DeM	Y
13.7	3	3	4	5	3	3	2	2	DeM	Y	13.8	10	9	8	8	9	9	8	9	S	Y
14.8	9	9	8	8	9	9	9	9	S	Y	15.7	5	5	5	5	5	4	4	4	R	Y
16.6	8	8	8	8	8	7	8	8	DeM	Y	16.7	3	3	3	3	3	3	3	3	R	Y
18.7	5	5	6	5	8	8	7	5	DeM	Y	17.7	7	6	6	6	6	6	6	7	S	Y
20.8	10	10	10	10	11	10	10	11	R	Y	18.7	6	7	5	5	5	4	4	4	S	Y
25.9	5	5	5	5	2	2	2	1	DeM	Y	19.7	5	4	5	5	5	5	4	4	S	Y
26.8	8	8	11	8	4	4	5	5	DeM	Y	20.7	3	3	3	3	3	3	3	3	DeM	Y
27.7	5	5	5	5	5	5	5	5	R	Y	21.8	-	5	-	5	10	11	9	5	DeM	Y
28.7	7	6	7	6	6	5	6	5	R	Y	22.7	4	4	4	4	4	4	4	5	DeM	Y
29.6	8	7	8	8	8	8	8	8	R	Y	24.7	5	5	5	5	5	4	4	4	R	Y
30.6	5	5	5	4	5	5	4	4	DeM	Y	25.8	3	4	5	5	4	4	4	5	S	Y
Sep. 1.6	5	4	5	5	4	4	5	4	S	Y	26.6	5	5	5	6	5	6	6	6	S	Y
2.6	8	8	8	8	8	8	8	8	S	Y	27.7	5	5	5	4	5	5	5	5	S	Y
3.6	6	6	6	7	6	6	7	6	R	Y	28.7	6	7	6	7	6	6	6	5	DeM	Y
4.6	6	6	6	7	6	6	6	6	R	Y	29.7	5	5	5	5	5	5	5	5	S	Y
5.7	7	6	6	6	6	8	11	10	9	Y	30.7	6	5	6	6	5	5	5	5	R	Y
6.6	8	8	8	8	8	8	8	8	DeM	Y	Dec. 1.8	4	4	4	4	6	5	5	3	R	Y
7.7	7	7	8	8	8	8	8	9	S	Y	2.8	5	5	4	5	4	4	3	3	R	Y
8.7	10	9	9	9	10	10	10	10	S	Y	5.7	2	2	2	2	3	2	2	2	R	Y
9.6	10	10	10	11	11	10	11	10	R	Y	6.7	4	4	3	3	3	3	3	3	R	Y
11.7	10	9	9	9	10	10	10	10	DeM	Y	7.7	7	8	8	9	8	8	9	10	S	Y
12.7	9	10	9	9	10	9	9	9	DeM	Y	8.7	5	4	5	5	5	5	5	5	S	Y
13.8	7	7	7	7	9	7	7	7	DeM	Y	12.7	3	3	4	3	3	4	4	3	DeM	Y
14.7	9	9	9	9	11	10	11	10	R	Y	13.9	3	3	3	3	3	3	3	3	R	Y
15.8	7	8	7	7	8	8	8	8	DeM	Y	14.7	2	2	2	3	4	3	5	3	R	Y
16.7	8	7	7	8	9	7	7	7	R	Y	15.7	3	3	3	5	3	3	3	3	R	Y
17.7	8	7	7	8	9	7	7	7	R	Y	17.7	5	4	4	4	5	6	5	4	S	Y
18.7	10	9	9	10	11	10	10	10	R	Y	18.7	2	2	3	2	2	2	3	2	DeM	Y
19.7	9	8	8	9	10	8	9	9	R	Y	19.7	2	3	3	2	3	3	2	2	DeM	Y
20.7	11	11	12	13	14	14	13	12	DeM	Y	20.7	4	5	4	5	4	5	4	4	S	Y
22.7	9	8	7	7	8	7	8	8	R	Y	21.7	5	5	5	6	5	5	7	7	DeM	Y
27.7	8	8	8	8	8	8	7	8	R	Y	22.7	3	3	3	3	3	3	3	3	R	Y
28.7	5	5	5	5	5	5	5	5	S	Y	23.8	4	3	4	4	5	5	4	4	R	Y
29.7	8	9	9	8	9	10	14	8	S	Y	24.7	2	2	2	2	2	2	2	2	R	Y
30.6	5	5	5	5	5	5	5	5	DeM	Y	25.7	3	6	5	3	5	5	5	5	S	Y
Oct. 1.7	7	7	6	7	6	6	6	7	DeM	Y	26.7	5	5	5	5	5	5	5	4	R	Y
3.7	3	3	3	3	6	5	6	6	R	Y	28.8	8	5	5	6	7	5	5	5	R	Y
9.7	5	5	5	5	5	5	5	5	S	Y	29.7	4	3	3	4	4	4	4	4	DeM	Y
10.7	6	6	5	5	5	6	6	6	S	Y	30.7	4	3	3	4	4	4	4	4	DeM	Y
11.7	5	6	6	6	6	6	6	7	S	Y	31.7	2	3	2	3	3	3	3	3	DeM	Y

- In observation taken at position angle indicated.

DeM = DeMastus  
 M = Mitchell  
 R = Ramsey  
 S = Schmale  
 Y = Y

Table 96

Zürich Provisional Relative Sunspot NumbersDecember 1954

Date	$R_Z^*$	Date	$R_Z^*$
1	0	17	17
2	0	18	14
3	0	19	19
4	0	20	19
5	0	21	14
6	0	22	7
7	0	23	7
8	0	24	15
9	0	25	10
10	0	26	7
11	0	27	0
12	0	28	0
13	0	29	13
14	0	30	29
15	11	31	25
16	18	Mean:	7.3

\* Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 97American Relative Sunspot NumbersNovember 1954

Date	$R_A$	Date	$R_A$
1	1	17	0
2	1	18	0
3	0	19	2
4	0	20	0
5	5	21	0
6	7	22	0
7	8	23	0
8	7	24	0
9	24	25	2
10	40	26	0
11	35	27	0
12	42	28	0
13	32	29	0
14	19	30	0
15	12	Mean:	8.0
16	2		

Table 98Solar Flares, December 1954

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No solar flares were reported for the month of December.

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Table 100Sudden Ionosphere Disturbances Observed at Washington, D. C.December 1954

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No sudden ionosphere disturbances were observed during the  
month of December.

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Note: Observers are invited to send to the CRPI information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Boulder, Colorado: Attention: Mr. Vaughn Agy.

## GRAPHS OF IONOSPHERIC DATA

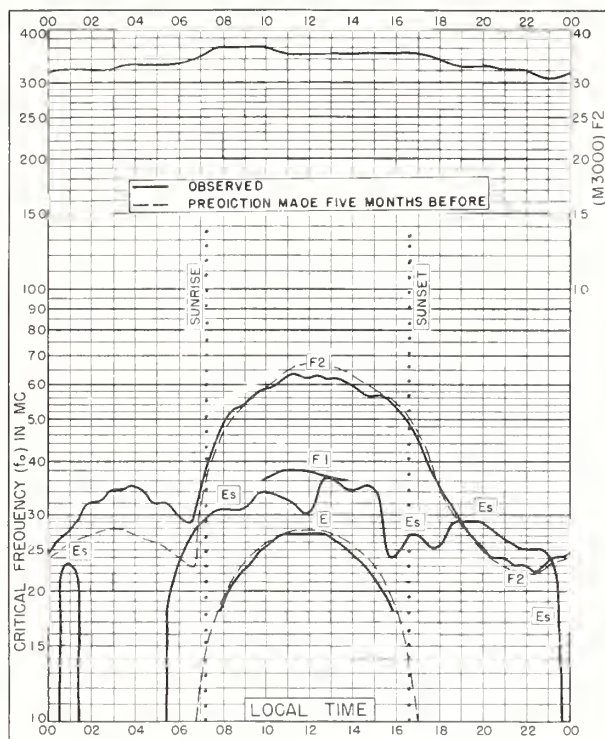


Fig. 1. WASHINGTON, D. C.  
38.7°N, 77.1°W DECEMBER 1954

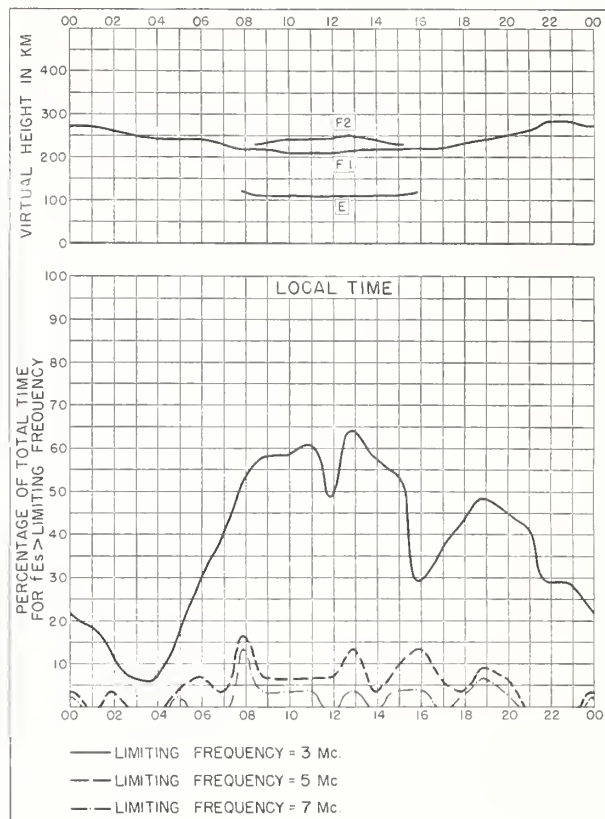


Fig. 2. WASHINGTON, D. C. DECEMBER 1954

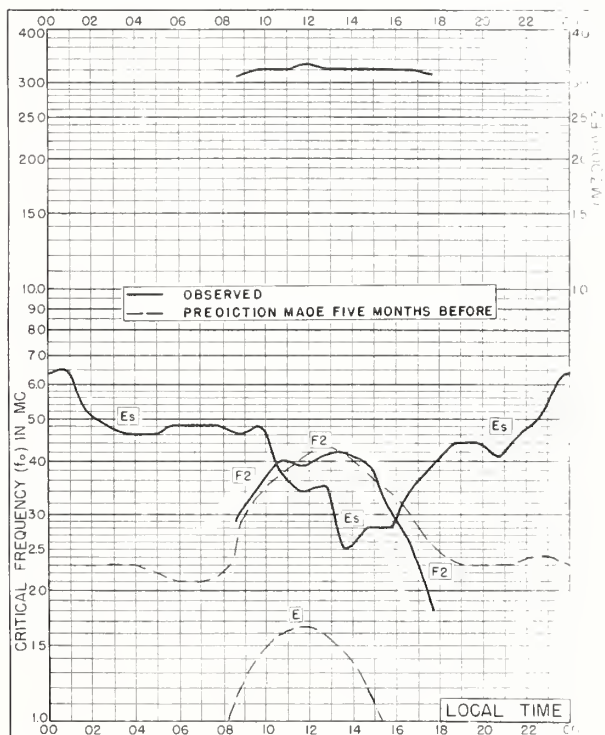


Fig. 3. POINT BARROW, ALASKA  
71.3°N, 156.8°W NOVEMBER 1954

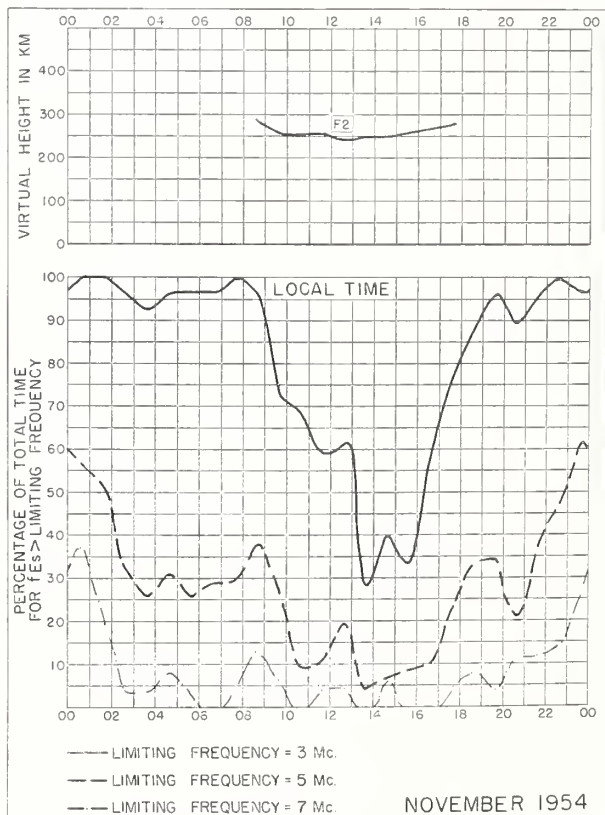


Fig. 4. POINT BARROW, ALASKA

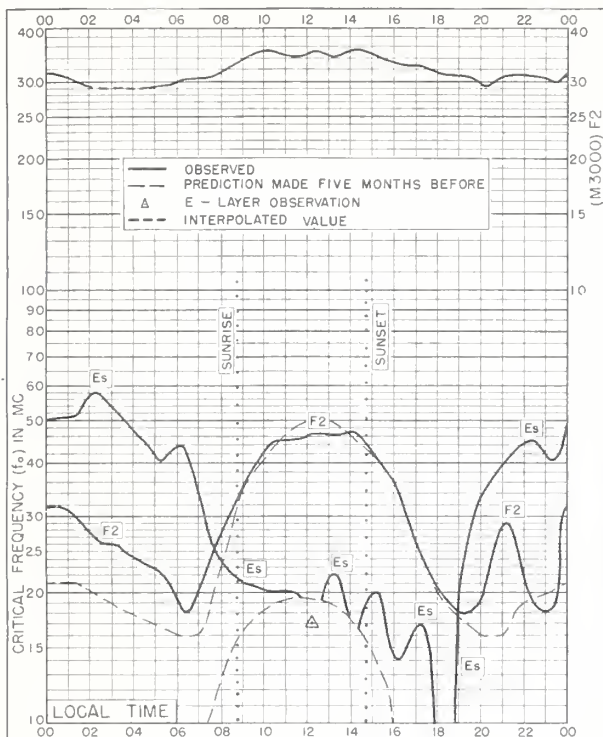


Fig. 5. FAIRBANKS, ALASKA  
64.9°N, 147.8°W NOVEMBER 1954

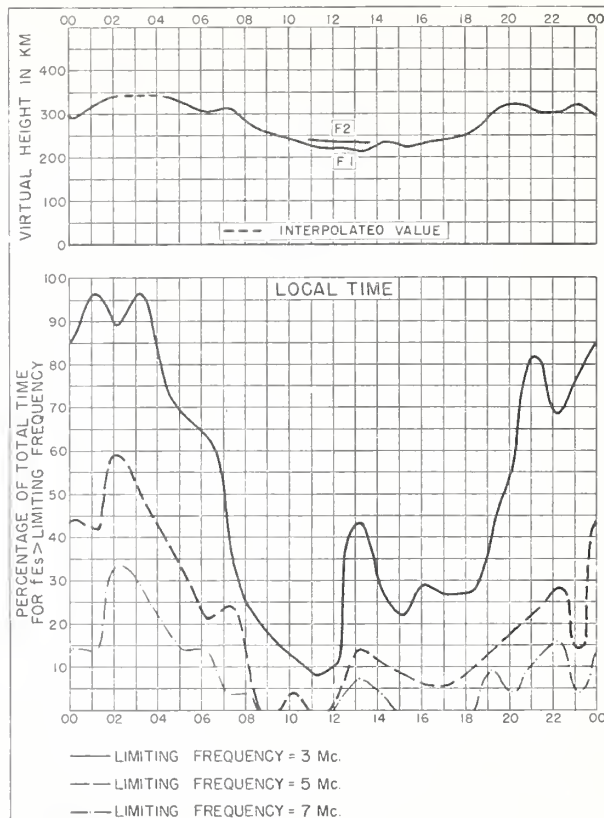


Fig. 6. FAIRBANKS, ALASKA NOVEMBER 1954

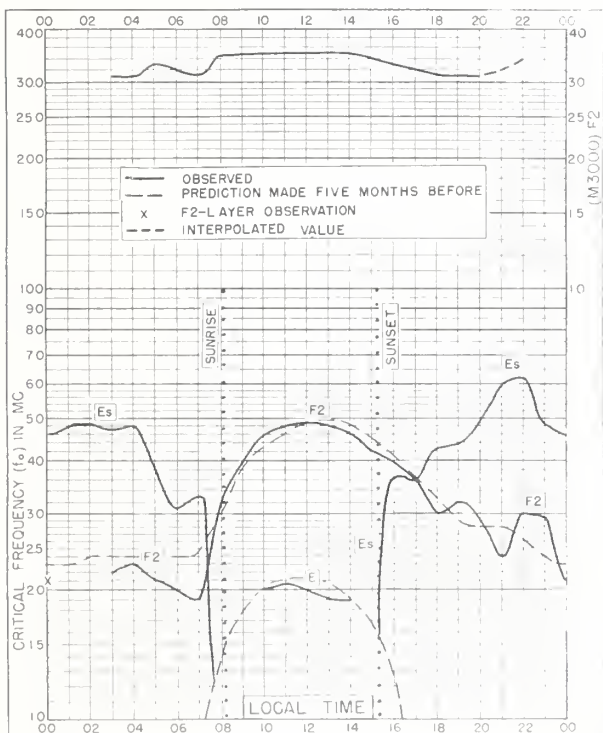


Fig. 7. NARSARSSUAQ, GREENLAND  
61.2°N, 45.4°W NOVEMBER 1954

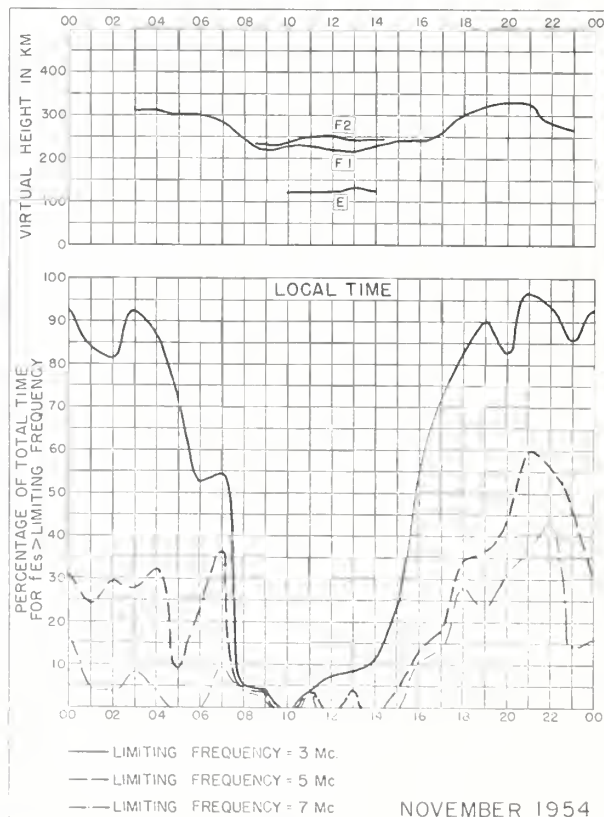


Fig. 8. NARSARSSUAQ, GREENLAND



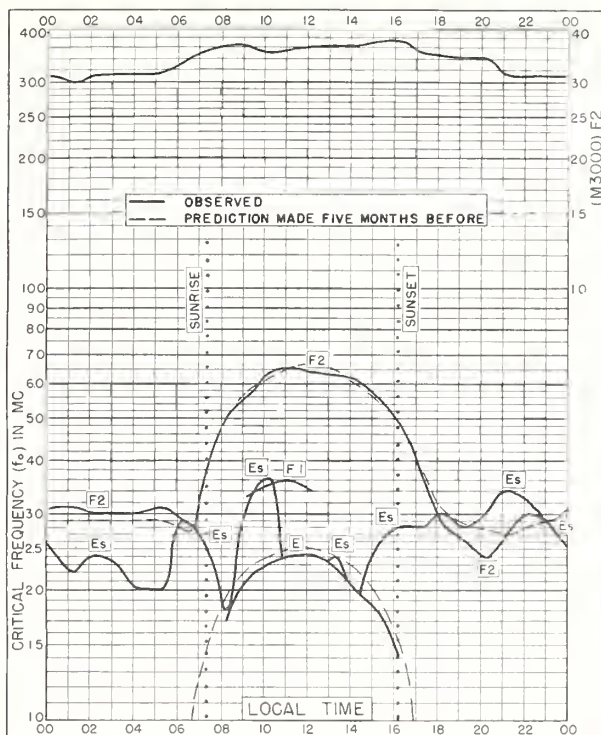


Fig. 9. ADAK, ALASKA  
51.9°N, 176.6°W

NOVEMBER 1954

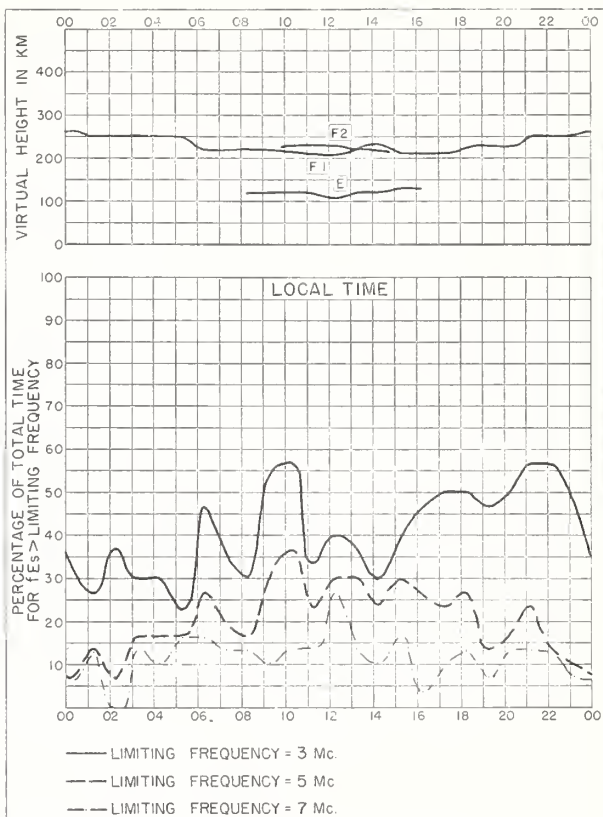


Fig. 10. ADAK, ALASKA

NOVEMBER 1954

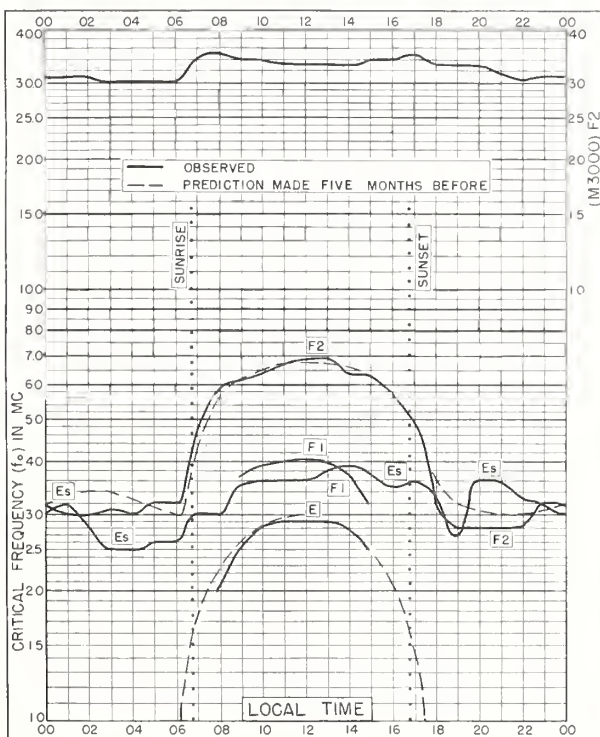


Fig. 11. SAN FRANCISCO, CALIFORNIA  
37.4°N, 122.2°W

NOVEMBER 1954

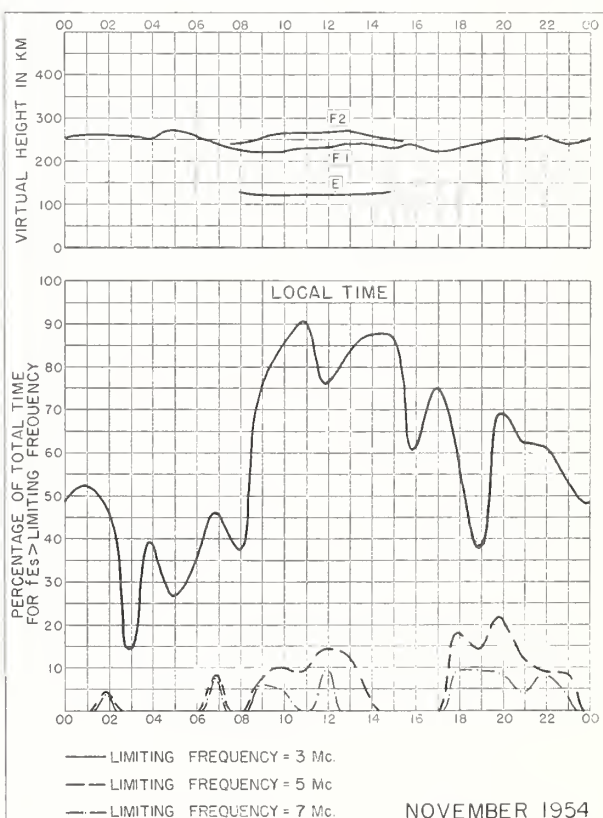


Fig. 12. SAN FRANCISCO, CALIFORNIA

NOVEMBER 1954



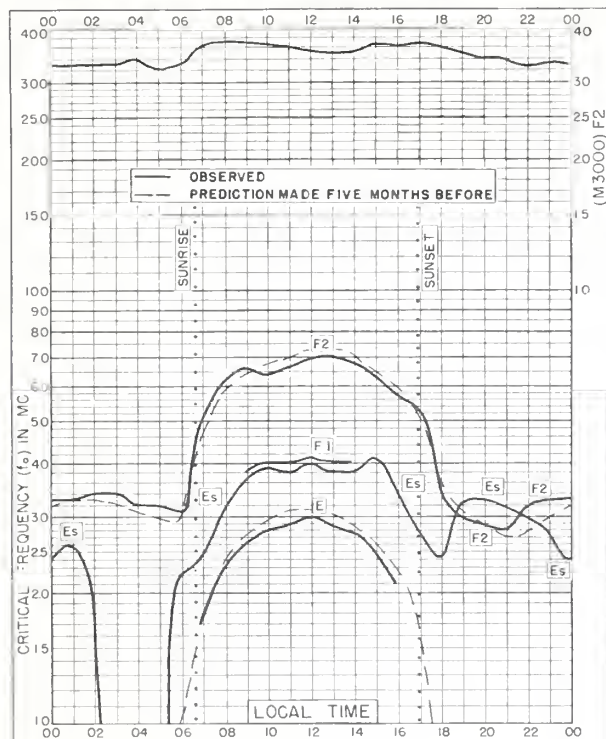


Fig. 13. WHITE SANDS, NEW MEXICO  
32.3°N, 106.5°W NOVEMBER 1954

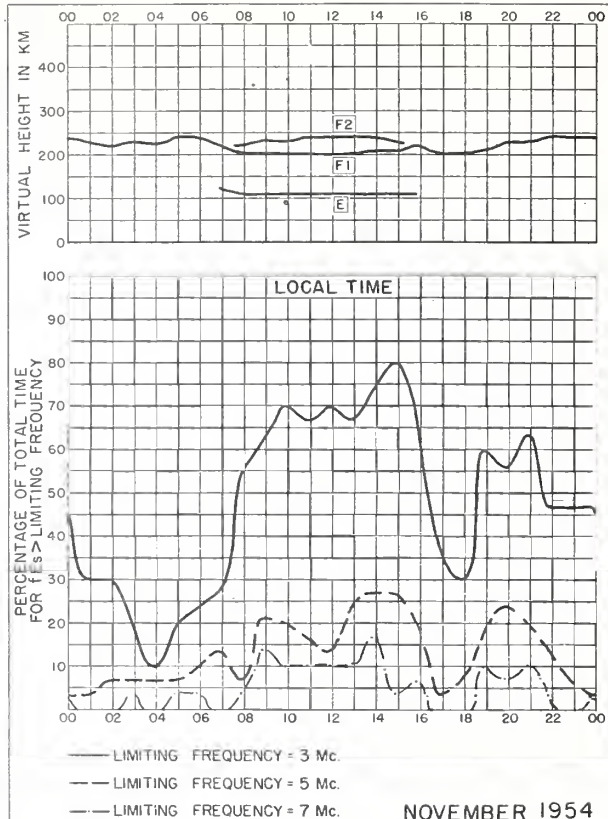


Fig. 14. WHITE SANDS, NEW MEXICO

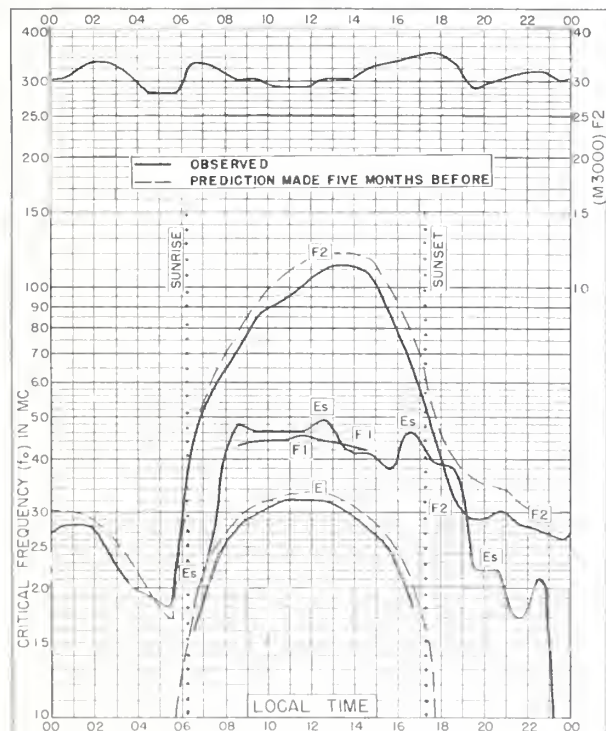


Fig. 15. MAUI, HAWAII  
20.8°N, 156.5°W NOVEMBER 1954

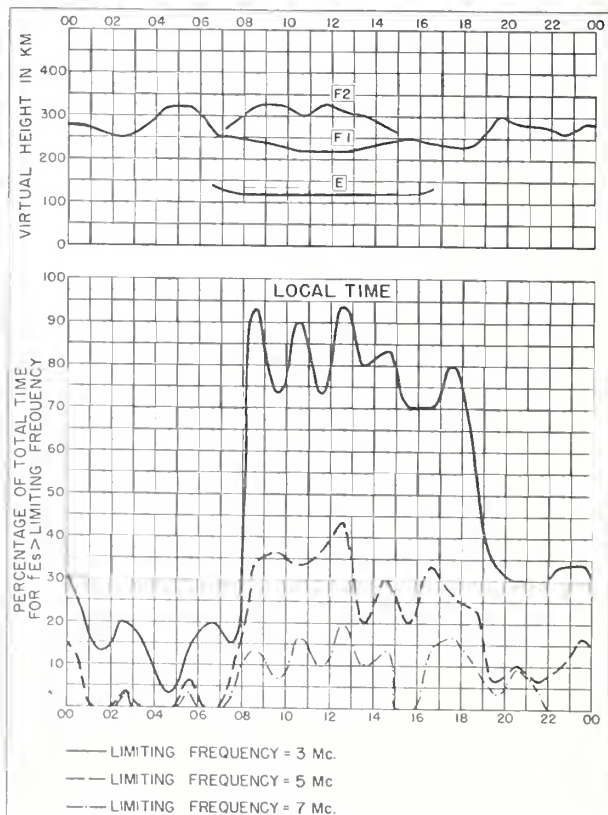


Fig. 16. MAUI, HAWAII NOVEMBER 1954

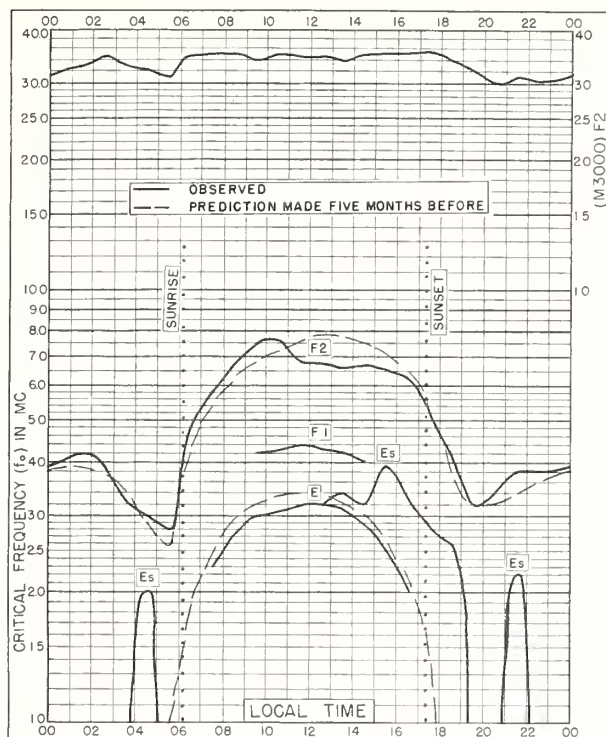


Fig. 17. PUERTO RICO, W. I.  
18.5°N, 67.2°W NOVEMBER 1954

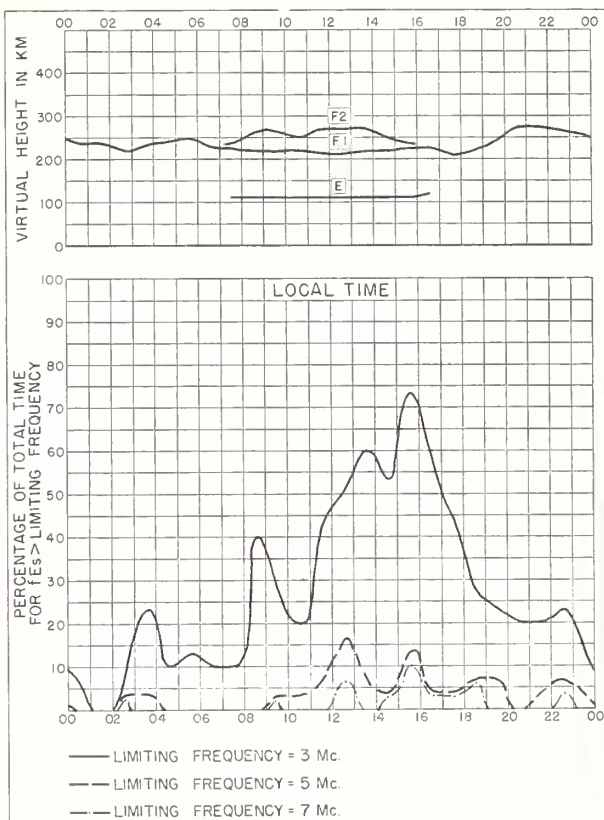


Fig. 18. PUERTO RICO, W. I. NOVEMBER 1954

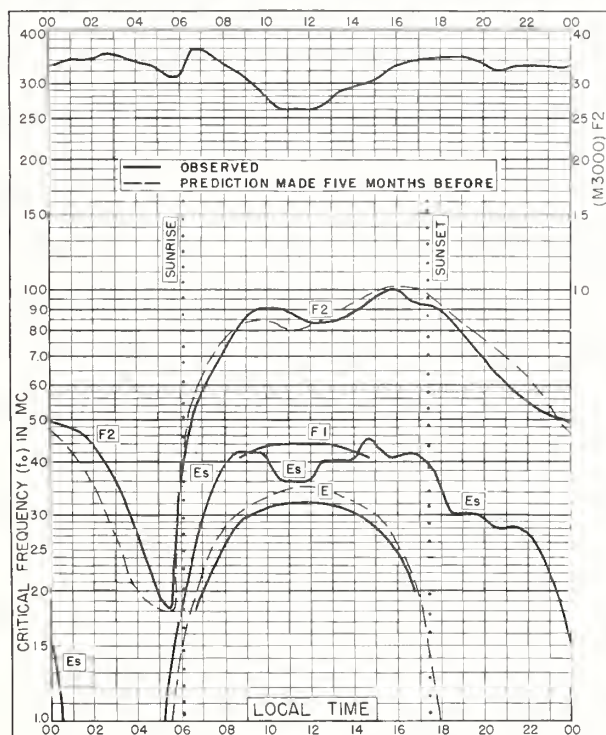


Fig. 19. GUAM I.  
13.6°N, 144.9°E NOVEMBER 1954

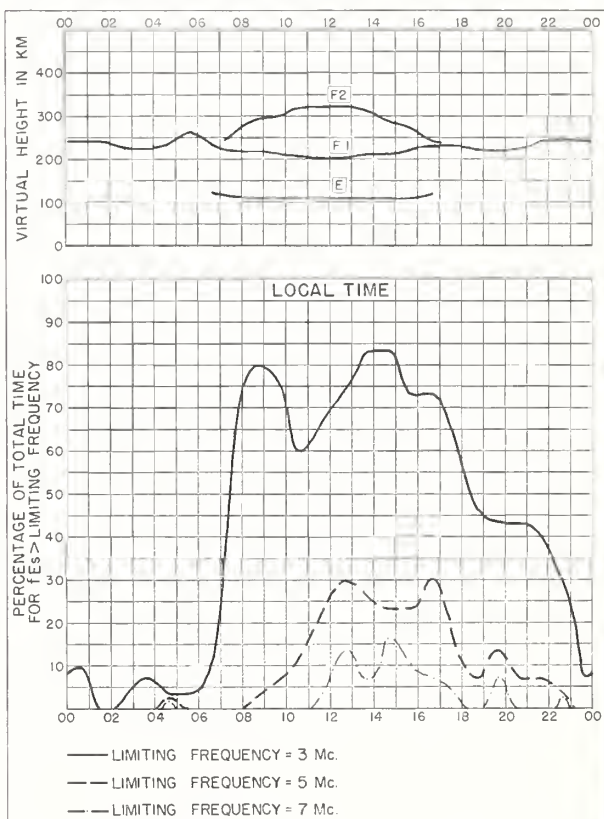


Fig. 20. GUAM I. NOVEMBER 1954

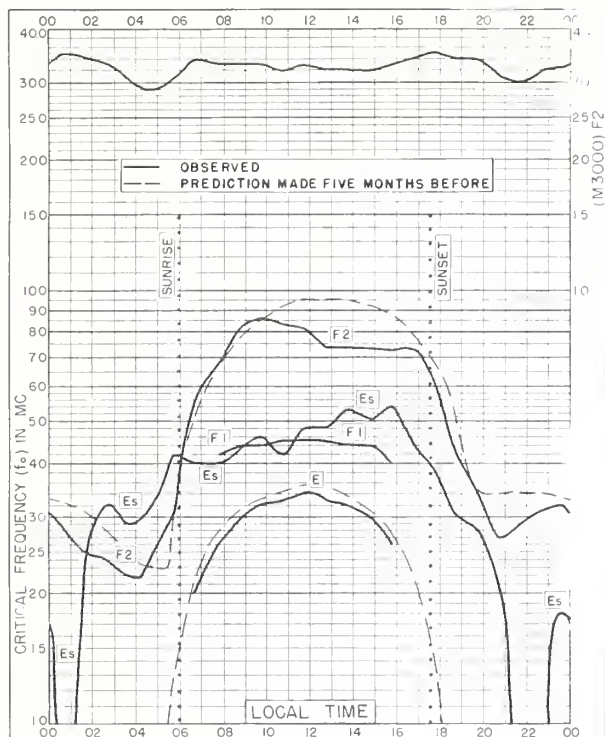


Fig. 21. PANAMA CANAL ZONE  
9.4°N, 79.9°W NOVEMBER 1954

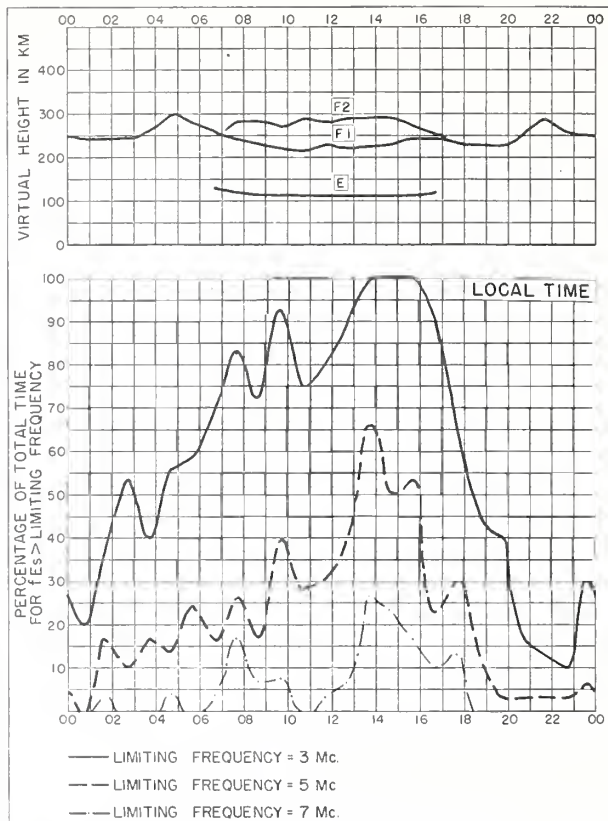


Fig. 22. PANAMA CANAL ZONE NOVEMBER 1954

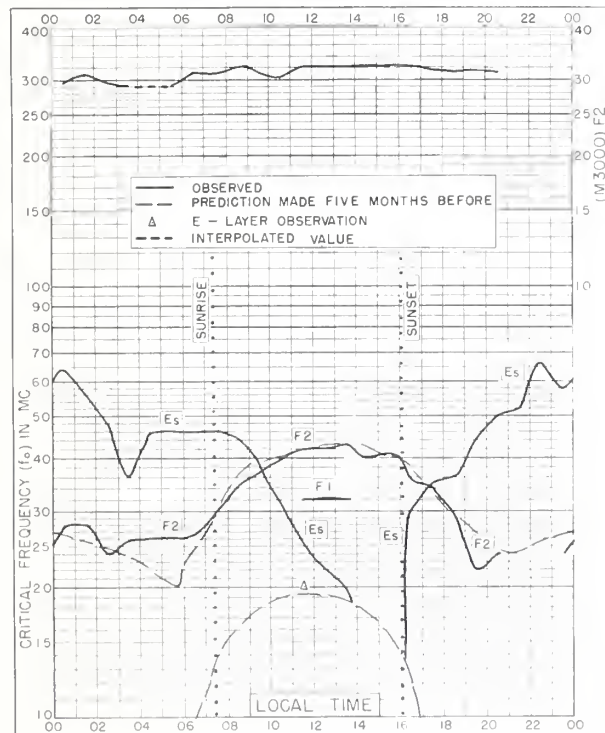


Fig. 23. POINT BARROW, ALASKA  
71.3°N, 156.8°W OCTOBER 1954

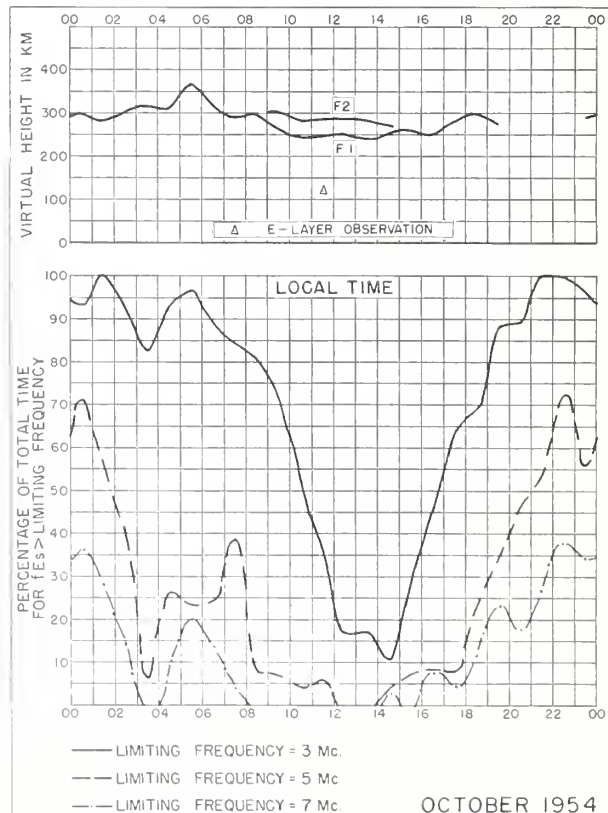
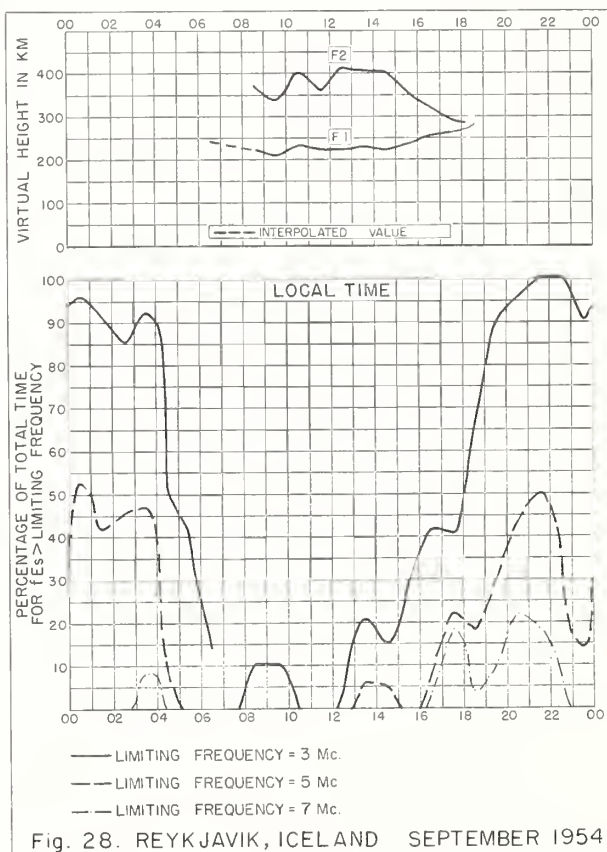
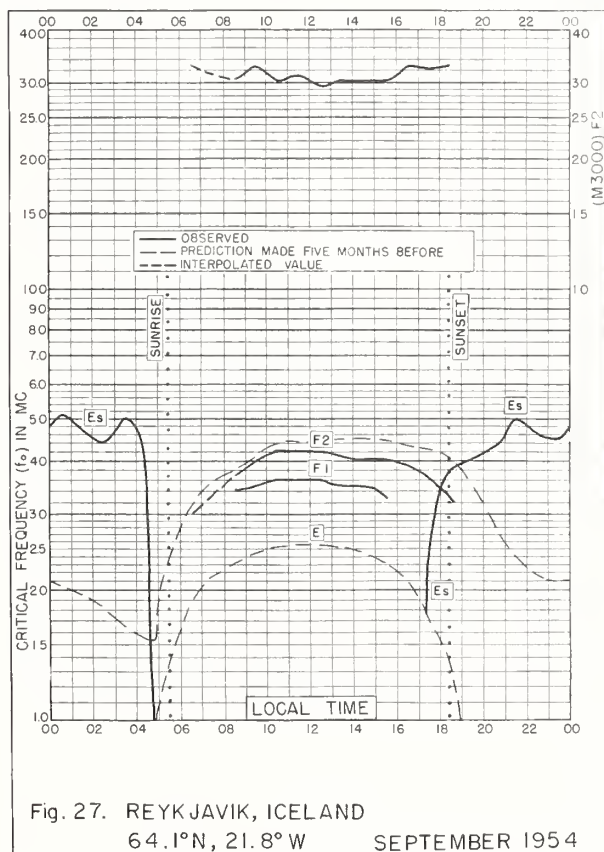
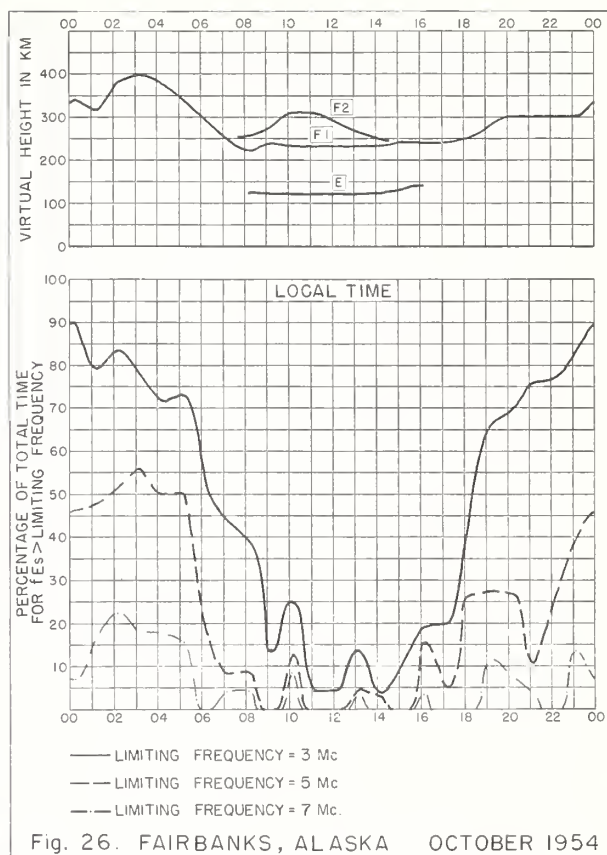
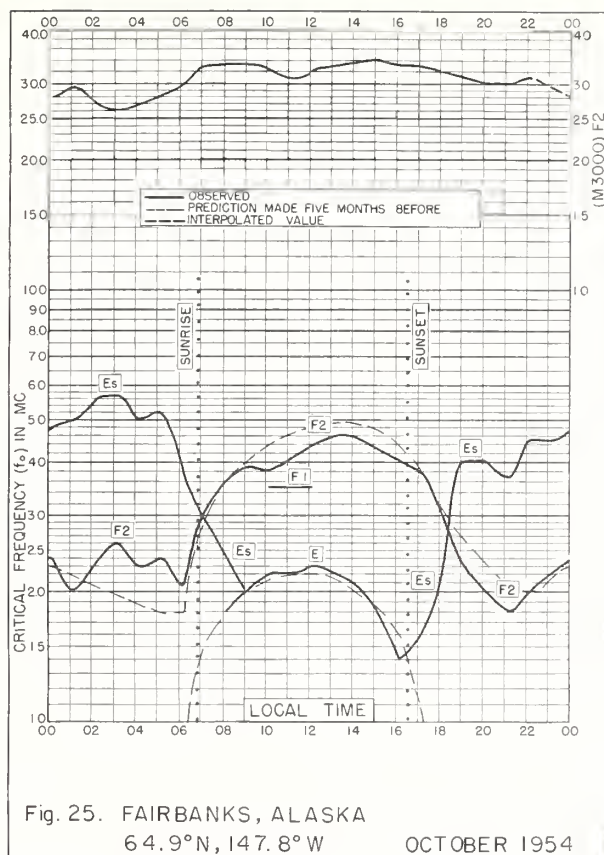


Fig. 24. POINT BARROW, ALASKA





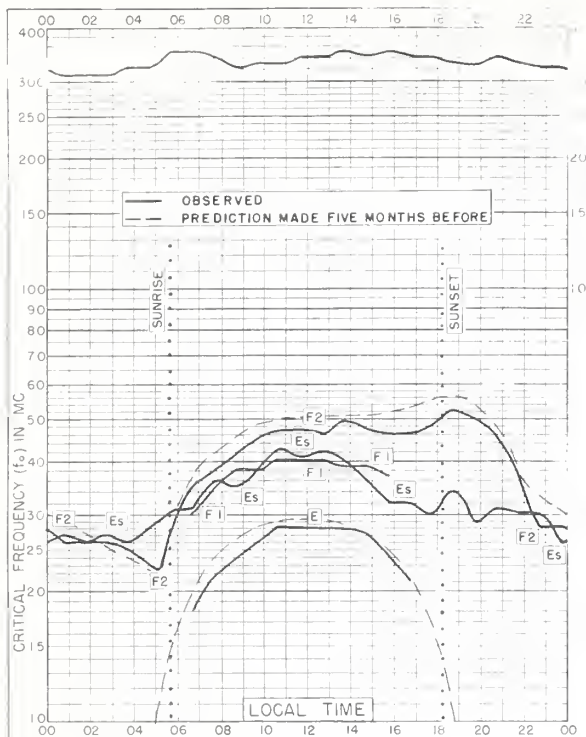


Fig. 29. LINDAU/HARZ, GERMANY  
51.6°N, 10.1°E SEPTEMBER 1954

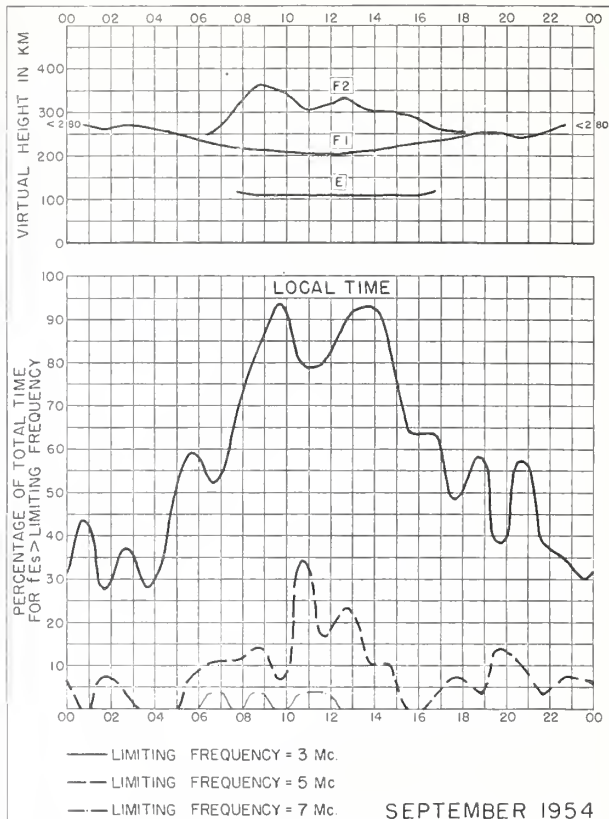


Fig. 30. LINDAU/HARZ, GERMANY

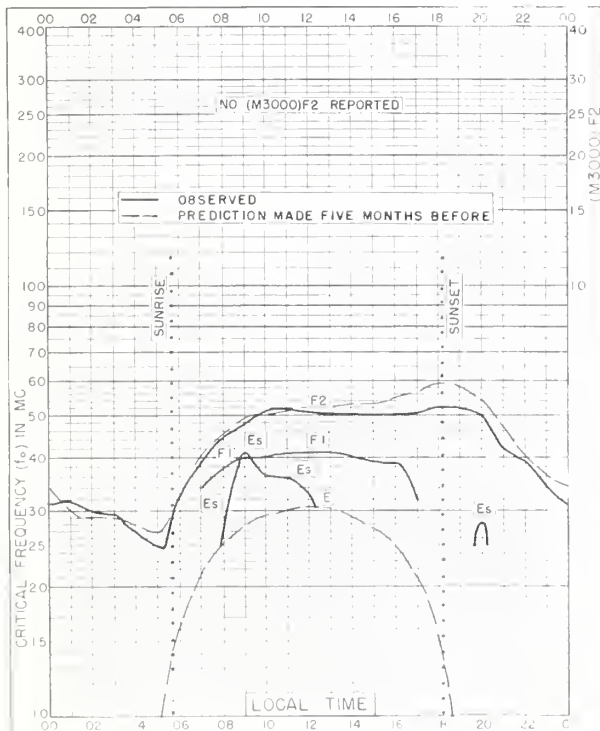


Fig. 31. GRAZ, AUSTRIA  
47.1°N, 15.5°E SEPTEMBER 1954

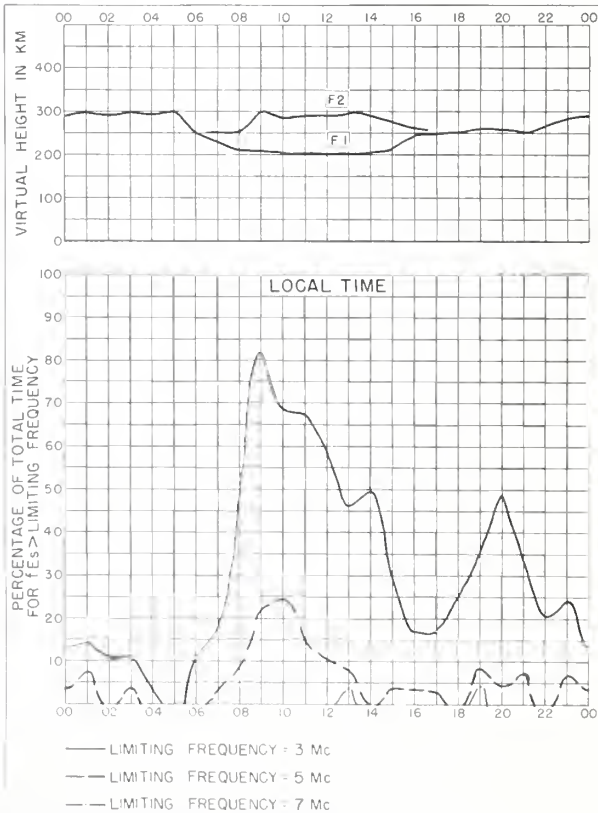


Fig. 32. GRAZ, AUSTRIA SEPTEMBER 1954



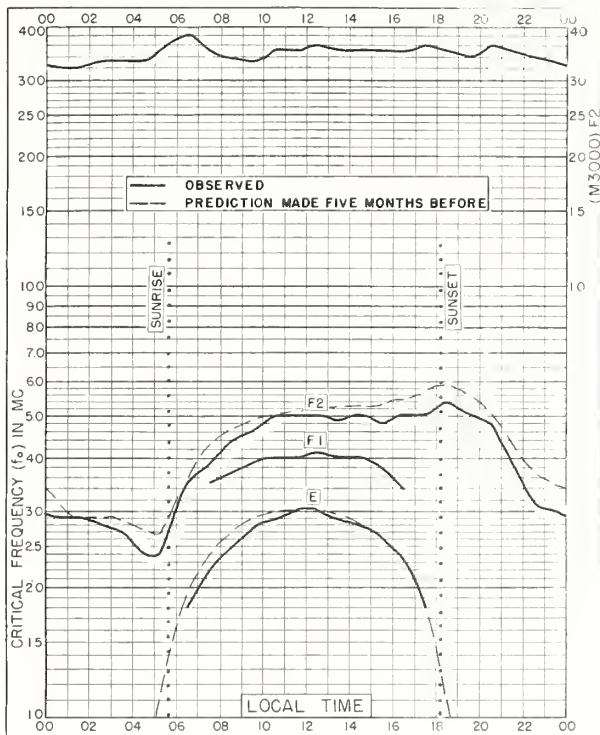


Fig. 33. SCHWARZENBURG, SWITZERLAND  
46.8°N, 7.3°E SEPTEMBER 1954

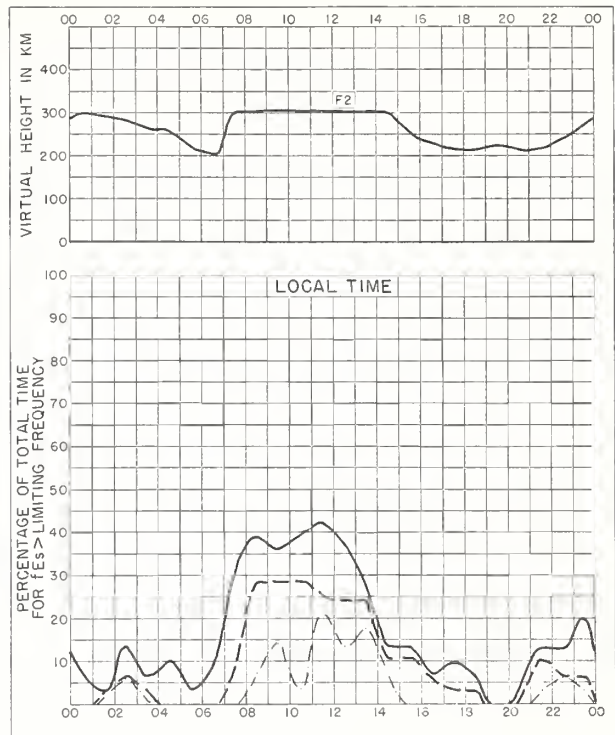


Fig. 34. SCHWARZENBURG, SWITZERLAND  
SEPTEMBER 1954

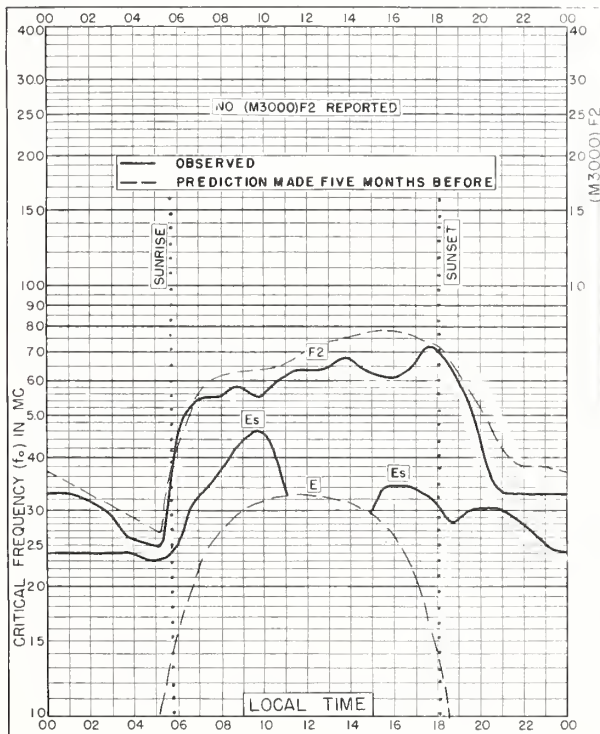


Fig. 35. YAMAGAWA, JAPAN  
31.2°N, 130.6°E SEPTEMBER 1954

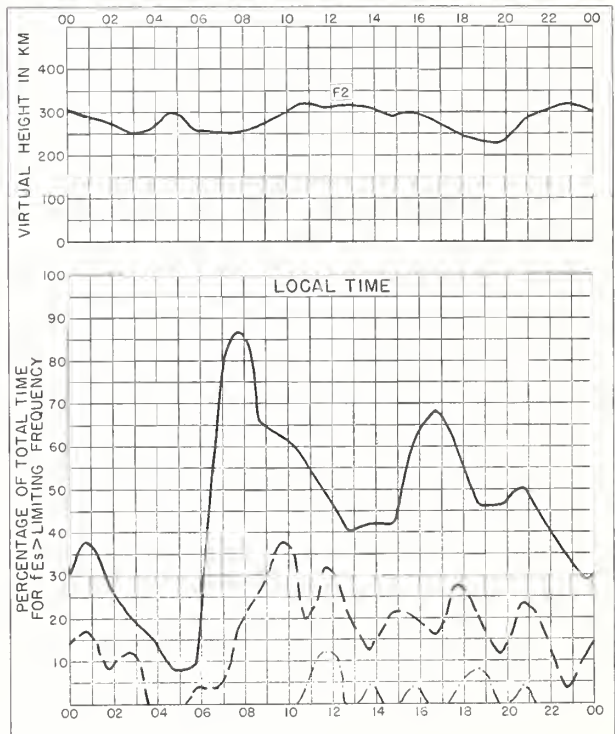


Fig. 36. YAMAGAWA, JAPAN SEPTEMBER 1954

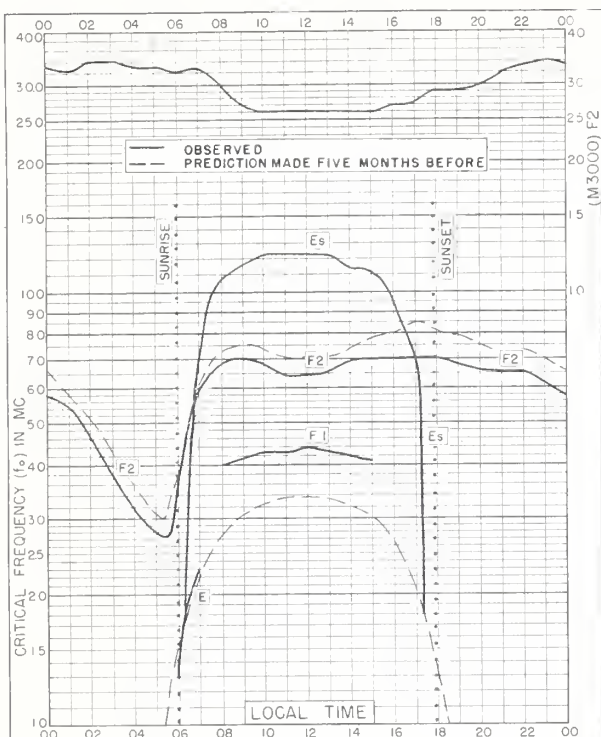


Fig. 37. HUANCAYO, PERU  
12.0°S, 75.3°W SEPTEMBER 1954

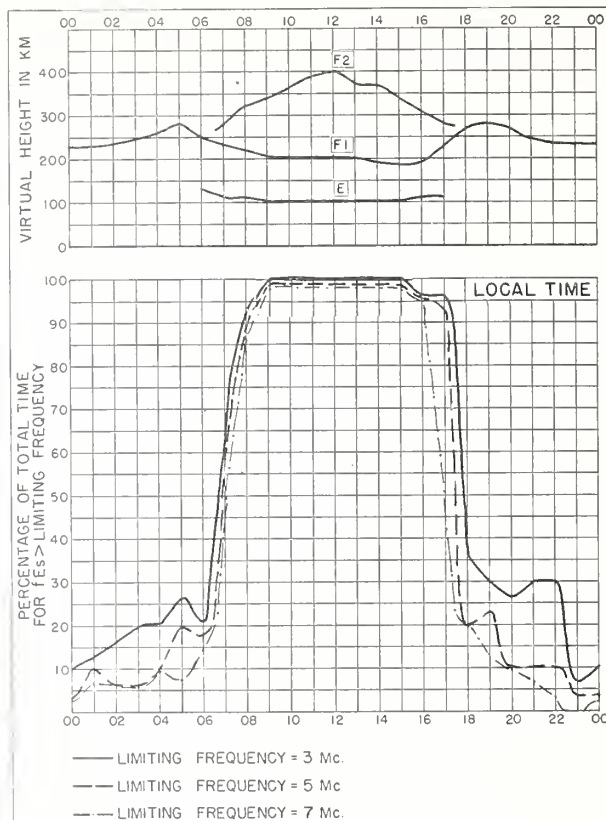


Fig. 38. HUANCAYO, PERU SEPTEMBER 1954

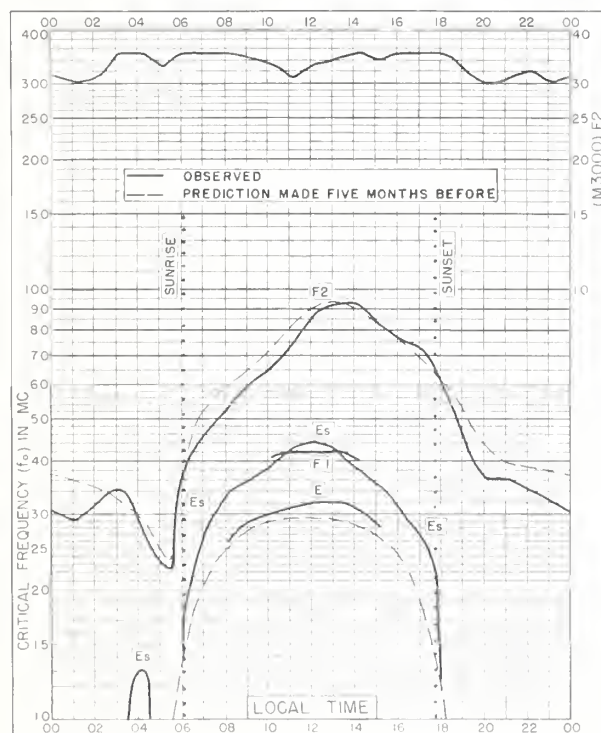


Fig. 39. BUENOS AIRES, ARGENTINA  
34.5°S, 58.5°W SEPTEMBER 1954

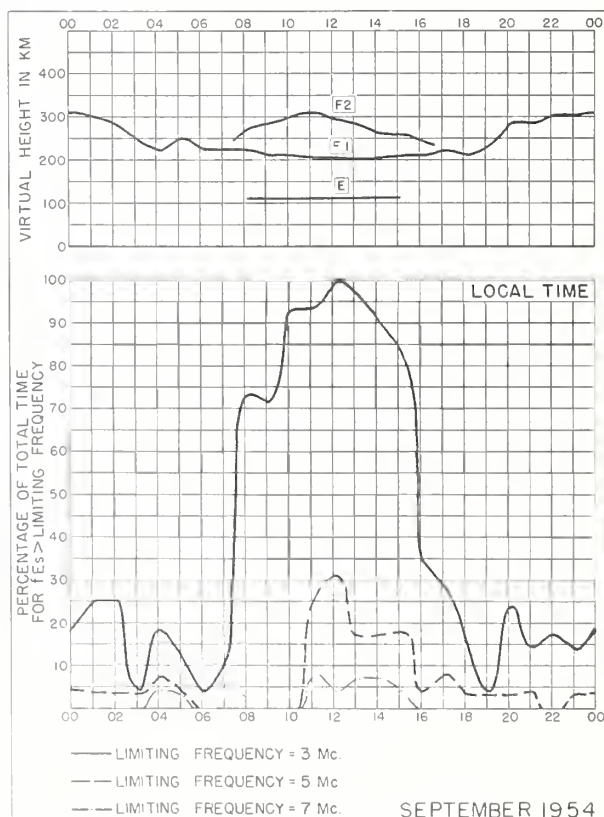


Fig. 40. BUENOS AIRES, ARGENTINA



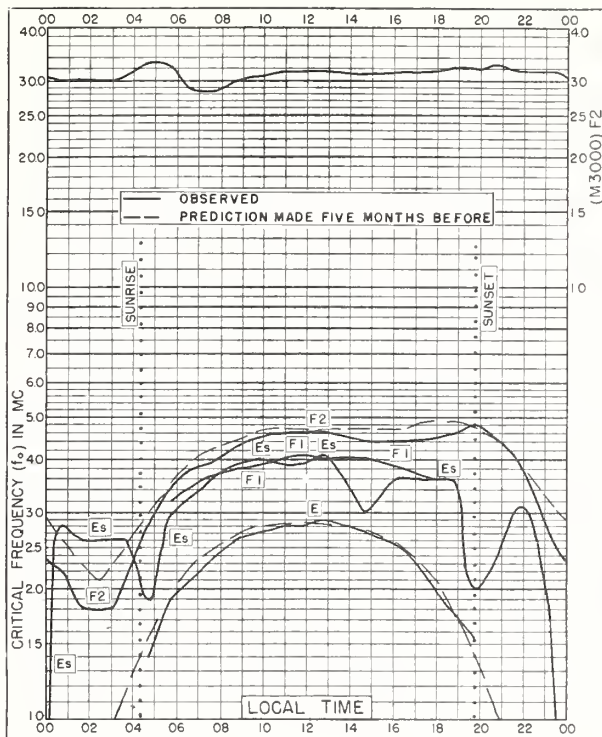


Fig. 41. OSLO, NORWAY  
60.0°N, 11.1°E

AUGUST 1954

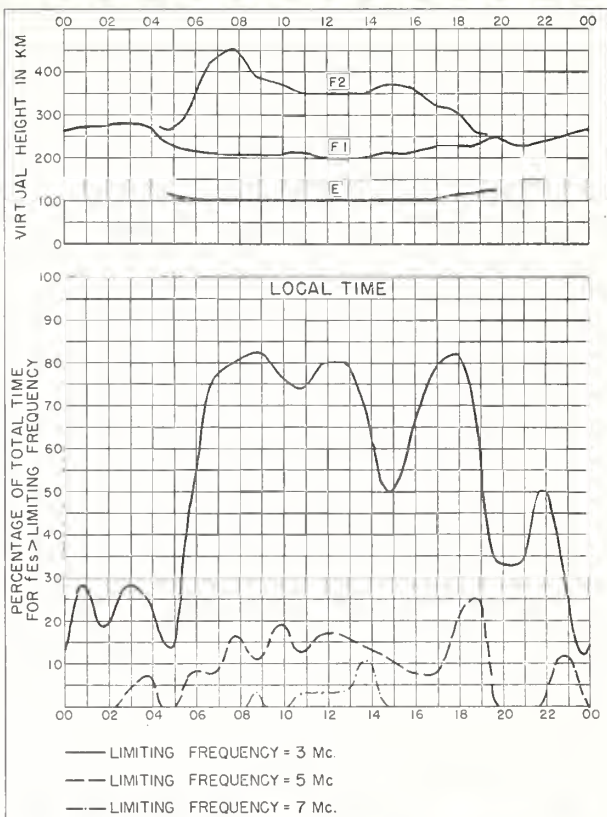


Fig. 42. OSLO, NORWAY

AUGUST 1954

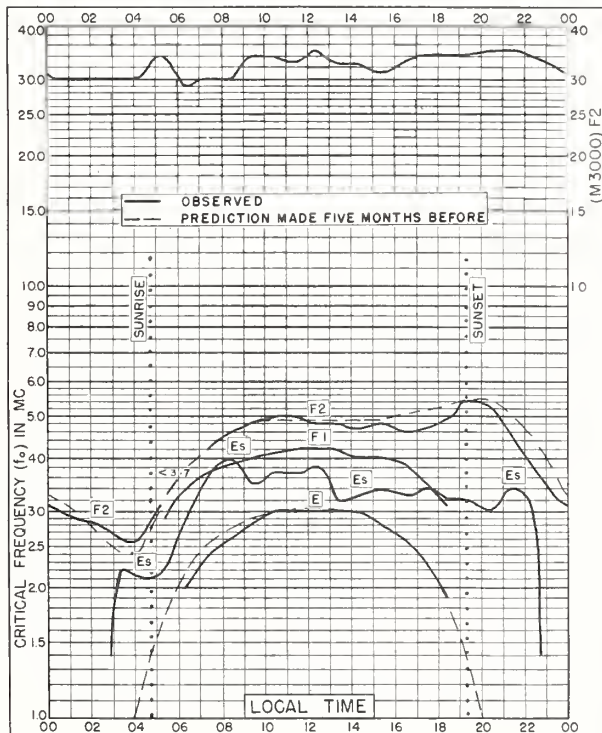


Fig. 43. De BILT, HOLLAND  
52.1°N, 5.2°E

AUGUST 1954

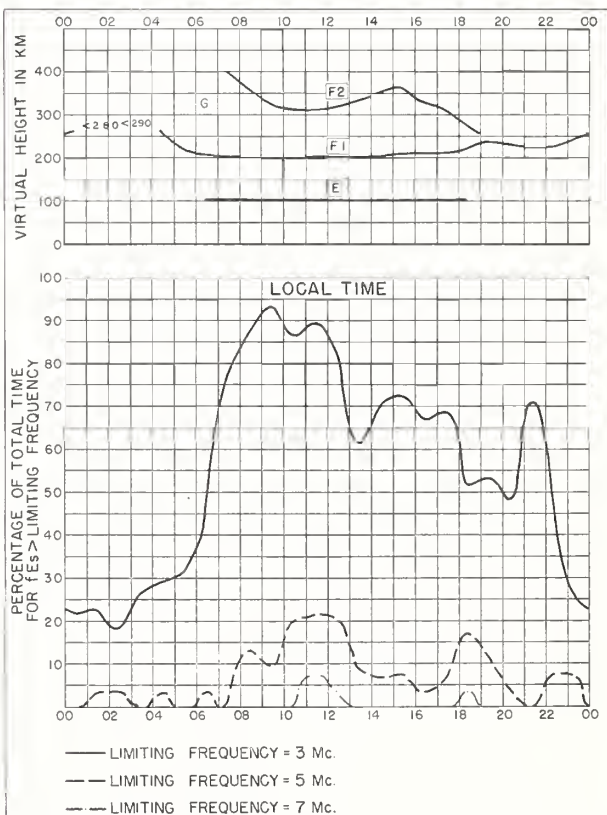


Fig. 44. De BILT, HOLLAND

AUGUST 1954

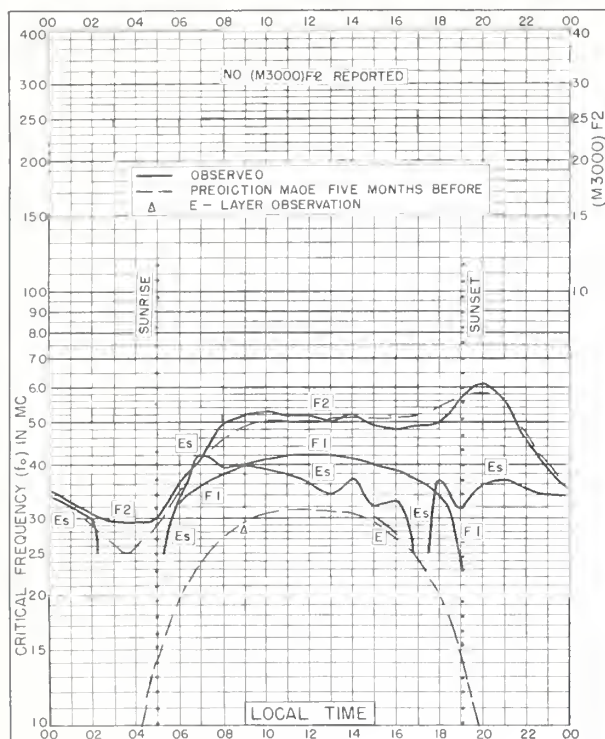


Fig. 45. GRAZ, AUSTRIA  
47.1°N, 15.5°E

AUGUST 1954

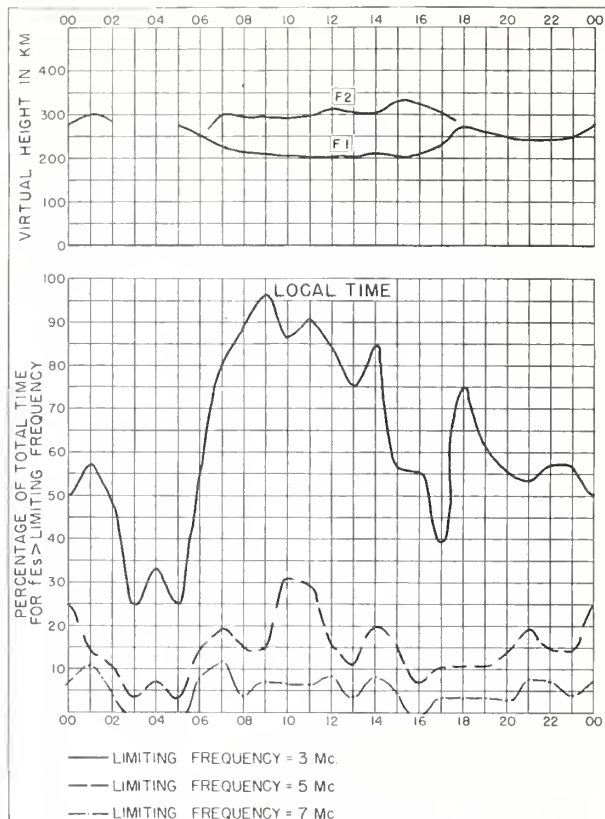


Fig. 46. GRAZ, AUSTRIA

AUGUST 1954

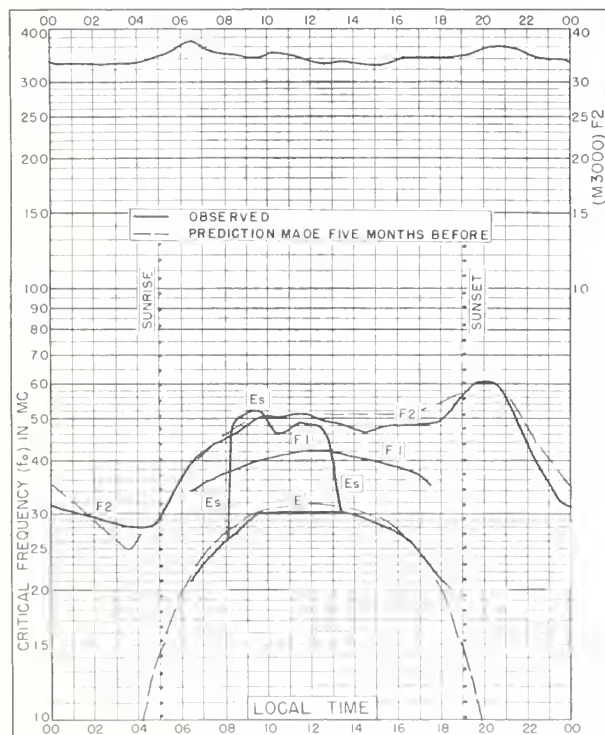


Fig. 47. SCHWARZENBURG, SWITZERLAND  
46.8°N, 7.3°E

AUGUST 1954

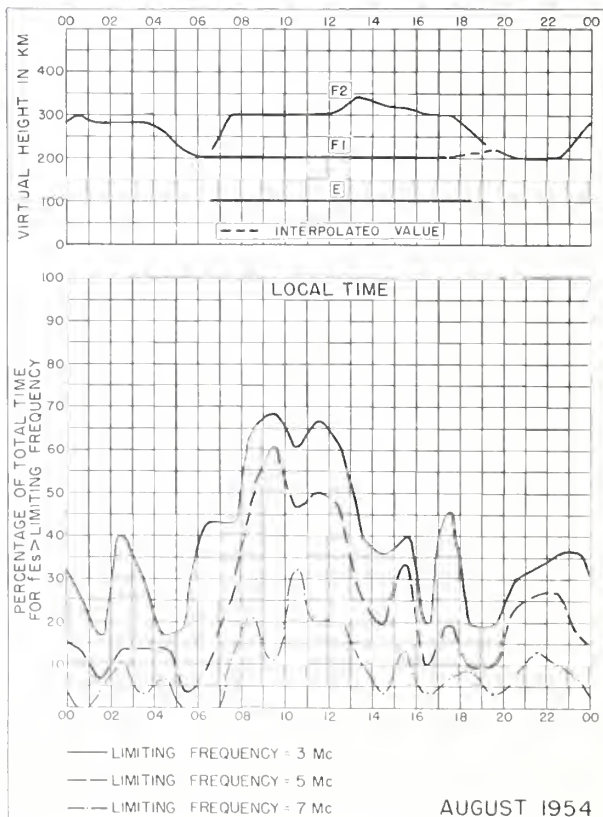


Fig. 48. SCHWARZENBURG, SWITZERLAND

AUGUST 1954



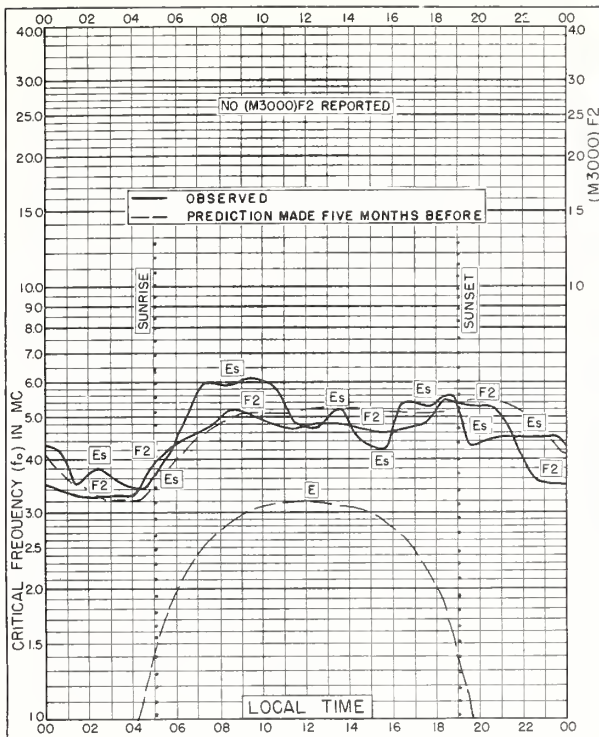


Fig. 49. WAKKANAI, JAPAN  
45.4°N, 141.7°E

AUGUST 1954

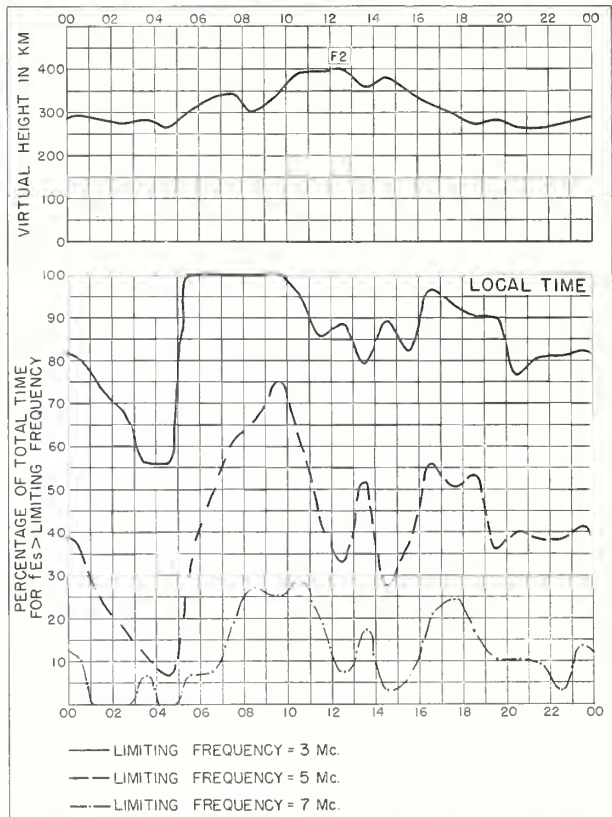


Fig. 50. WAKKANAI, JAPAN

AUGUST 1954

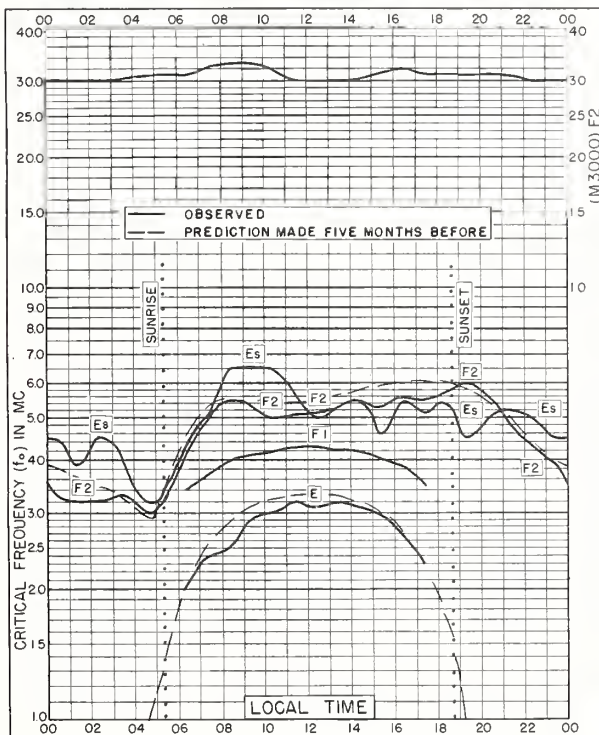


Fig. 51. TOKYO, JAPAN  
35.7°N, 139.5°E

AUGUST 1954

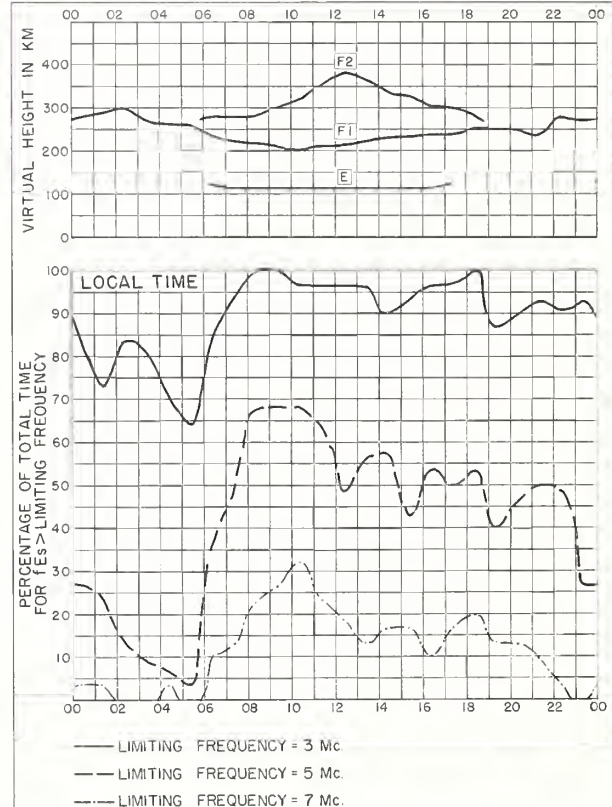


Fig. 52. TOKYO, JAPAN

AUGUST 1954



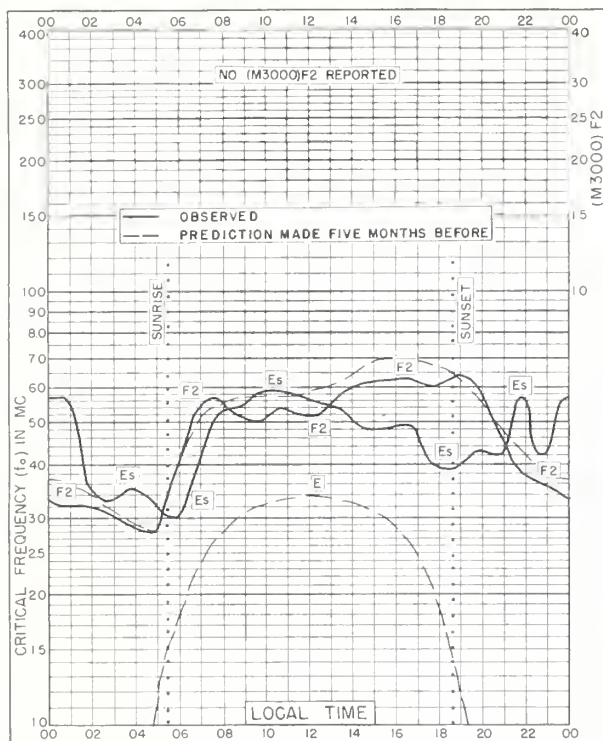


Fig. 53. YAMAGAWA, JAPAN  
31.2°N, 130.6°E

AUGUST 1954

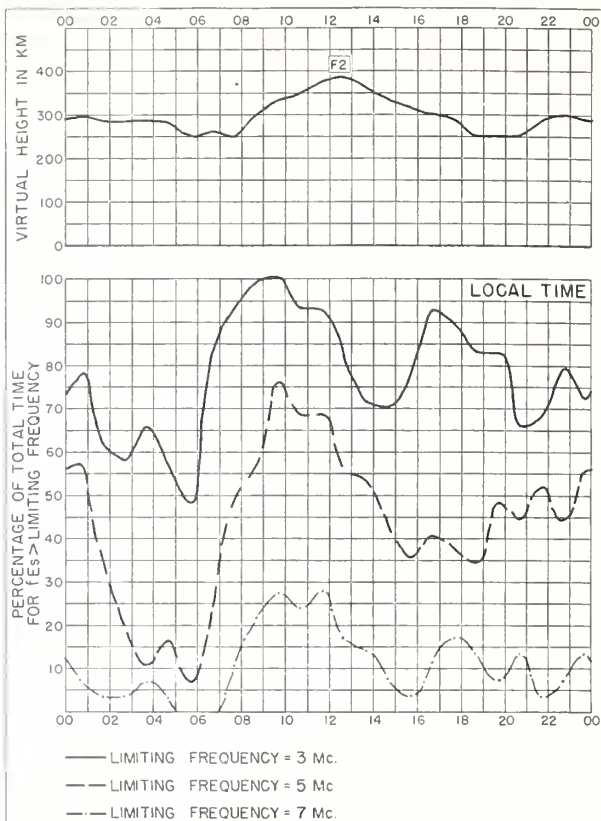


Fig. 54. YAMAGAWA, JAPAN

AUGUST 1954

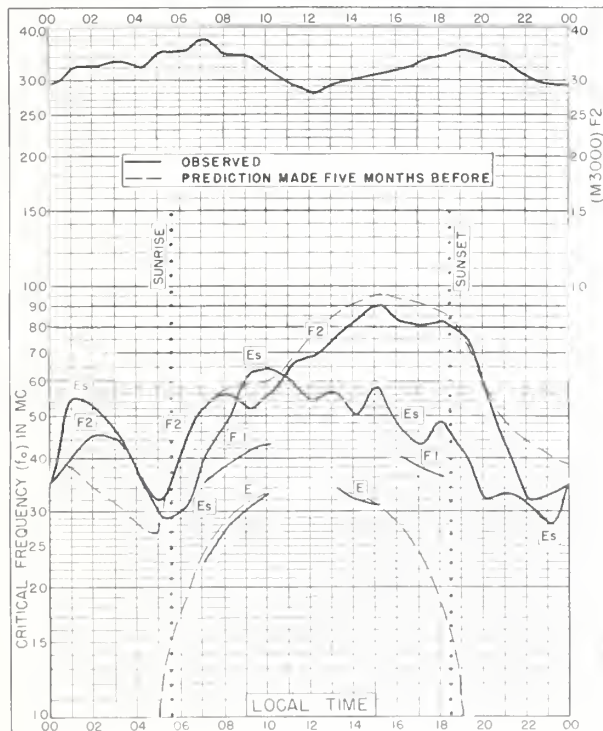


Fig. 55. FORMOSA, CHINA  
25.0°N, 121.5°E

AUGUST 1954

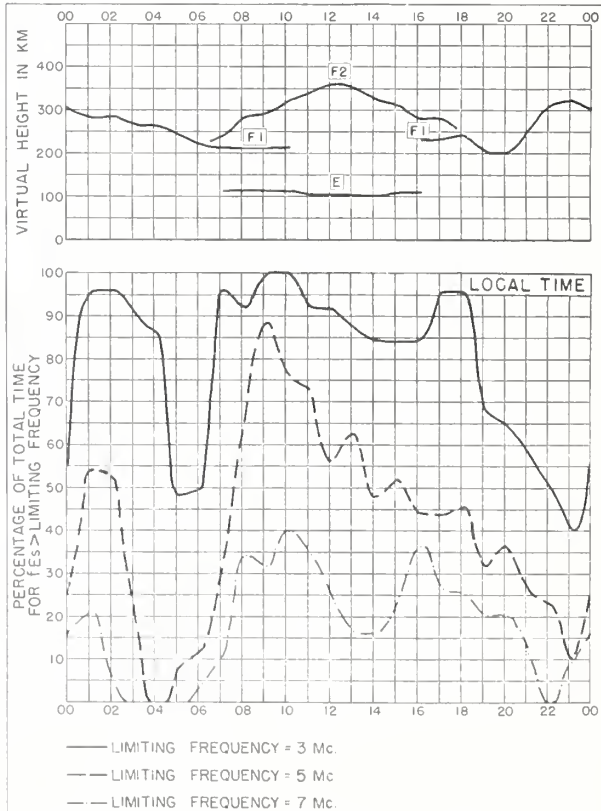


Fig. 56. FORMOSA, CHINA

AUGUST 1954

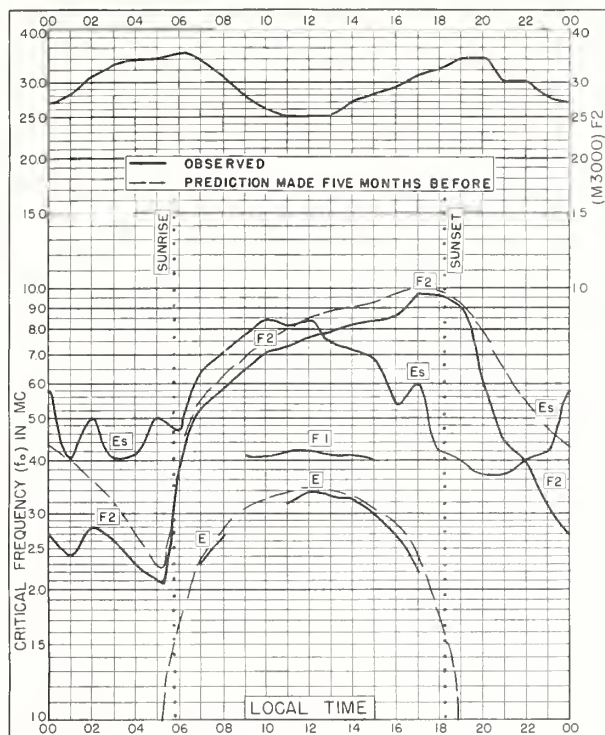


Fig. 57. BAGUIO, P. I.  
16.4°N, 120.6°E

AUGUST 1954

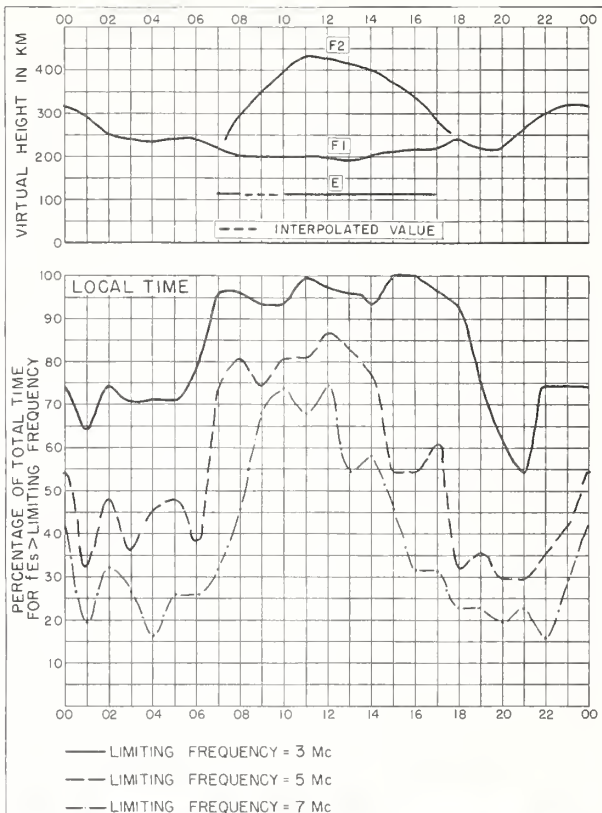


Fig. 58. BAGUIO, P. I.

AUGUST 1954

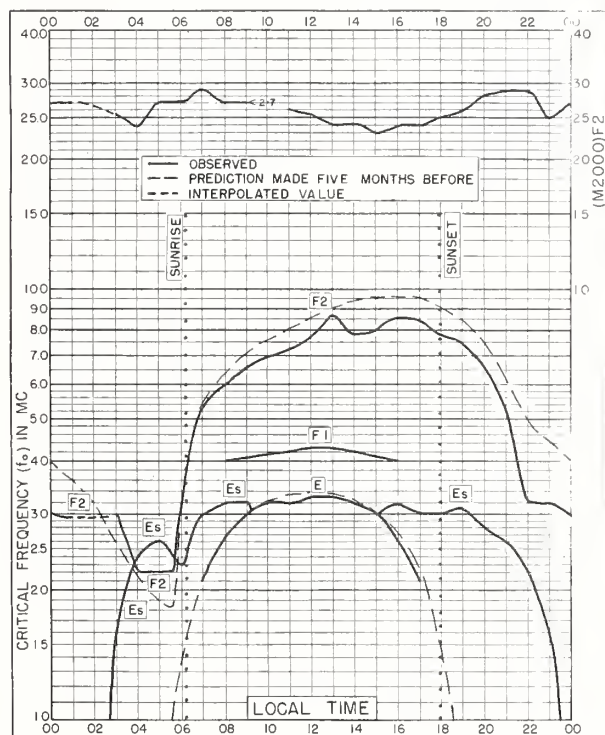


Fig. 59. LEOPOLDVILLE, BELGIAN CONGO  
4.3°S, 15.3°E

AUGUST 1954

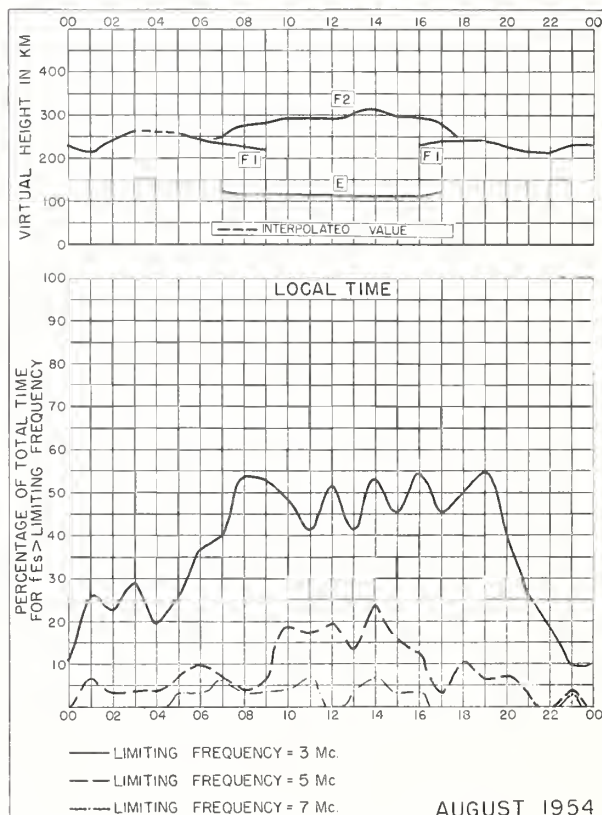


Fig. 60. LEOPOLDVILLE, BELGIAN CONGO

AUGUST 1954

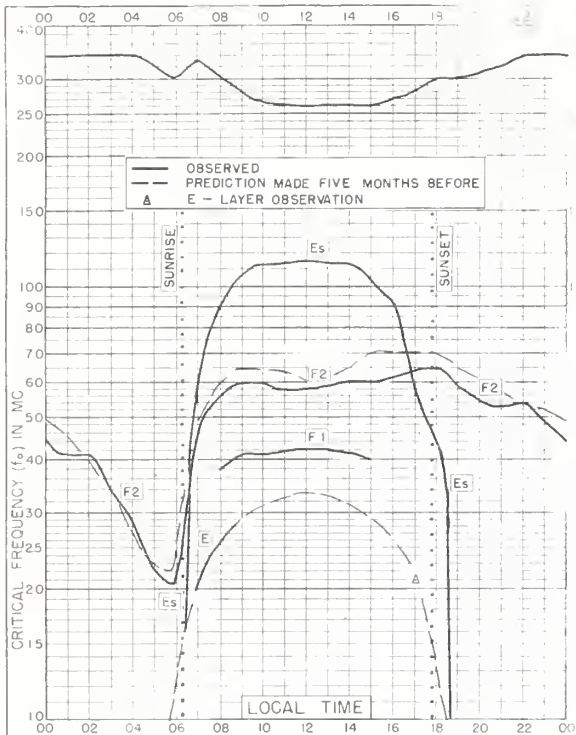


Fig. 61. HUANCAYO, PERU  
12.0°S, 75.3°W

AUGUST 1954

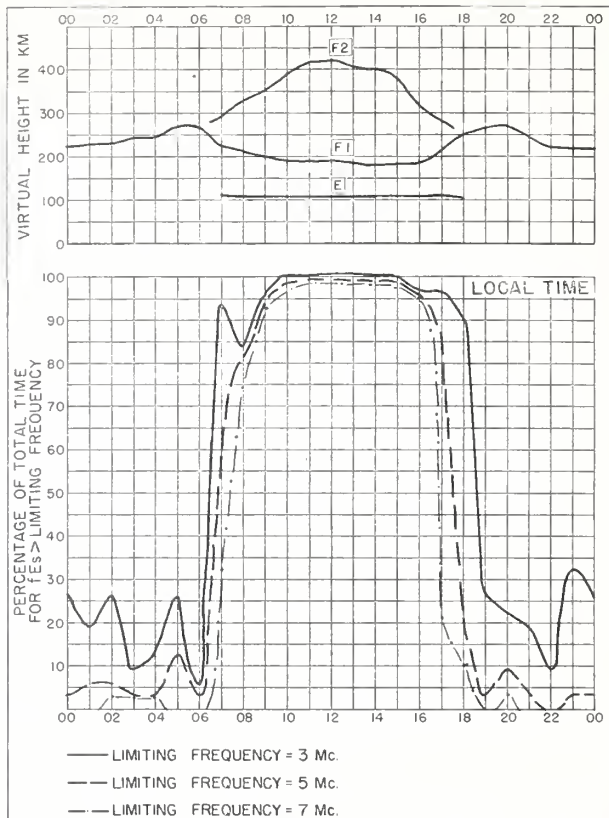


Fig. 62. HUANCAYO, PERU

AUGUST 1954

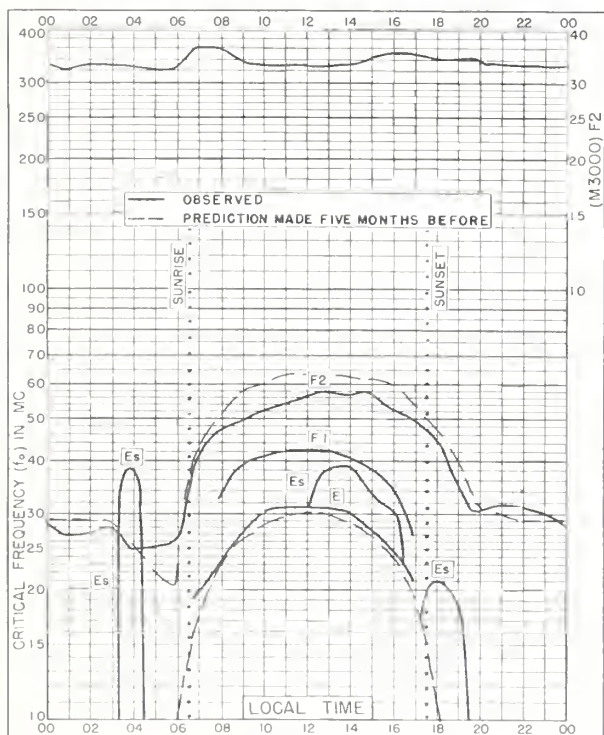


Fig. 63. JOHANNESBURG, UNION OF S. AFRICA  
26.2°S, 28.1°E

AUGUST 1954

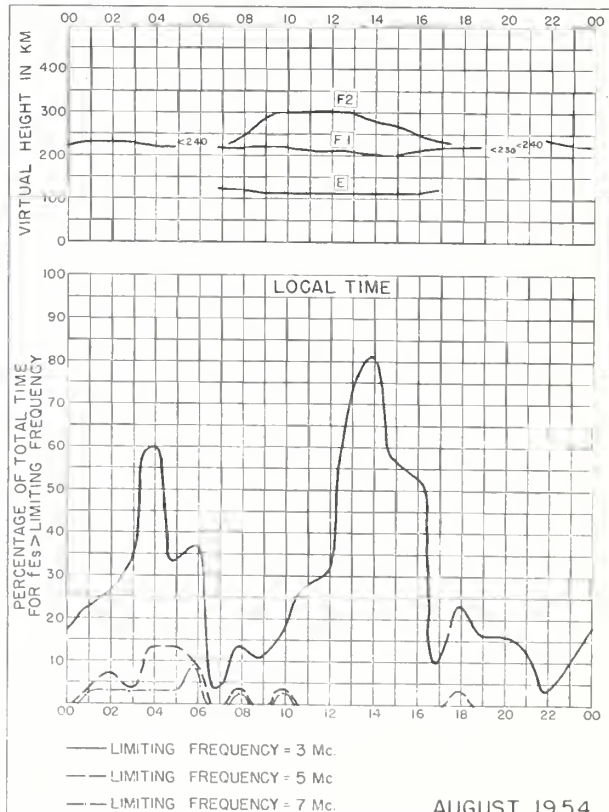


Fig. 64. JOHANNESBURG, UNION OF S. AFRICA

AUGUST 1954



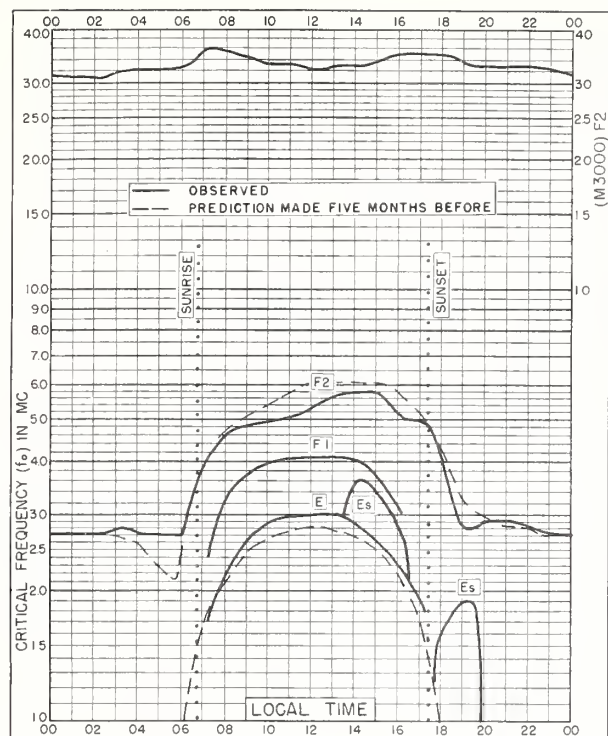


Fig. 65. CAPETOWN, UNION OF S. AFRICA  
34.2°S, 18.3°E  
AUGUST 1954

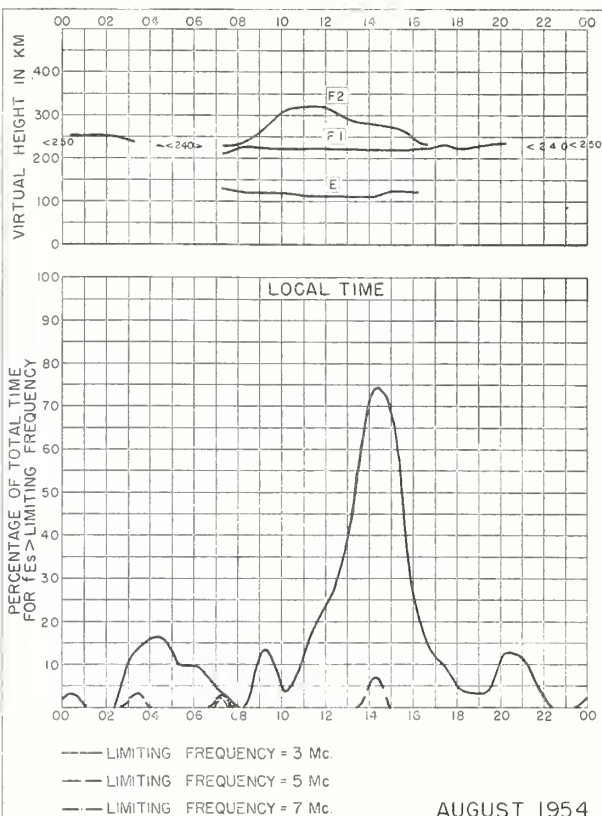


Fig. 66. CAPETOWN, UNION OF S. AFRICA

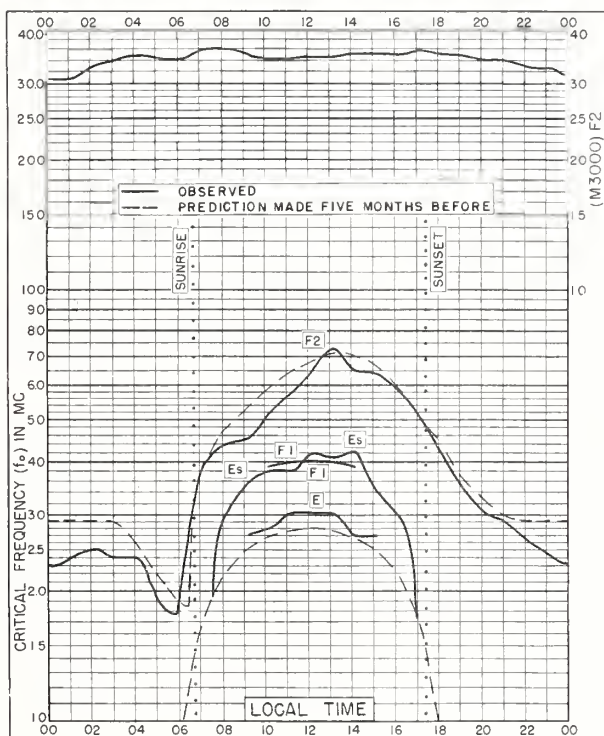


Fig. 67. BUENOS AIRES, ARGENTINA  
34.5°S, 58.5°W  
AUGUST 1954

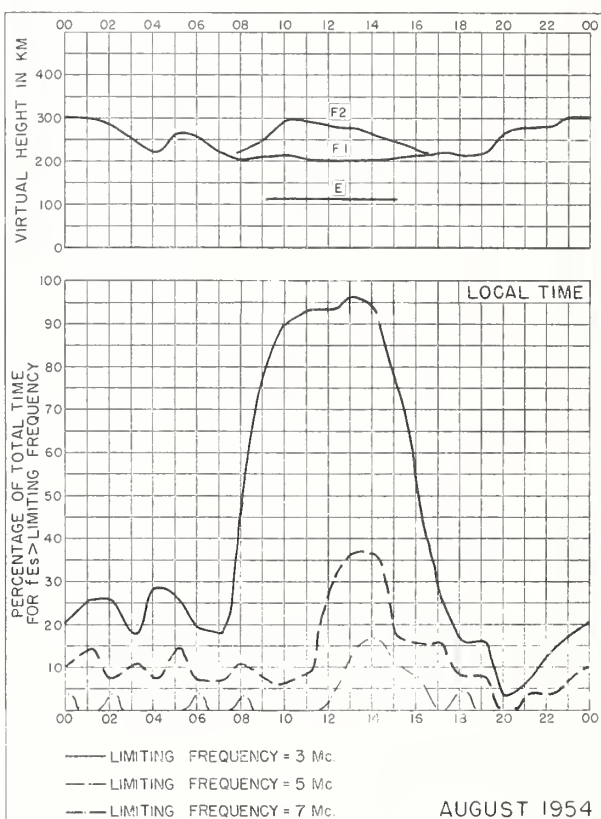


Fig. 68. BUENOS AIRES, ARGENTINA

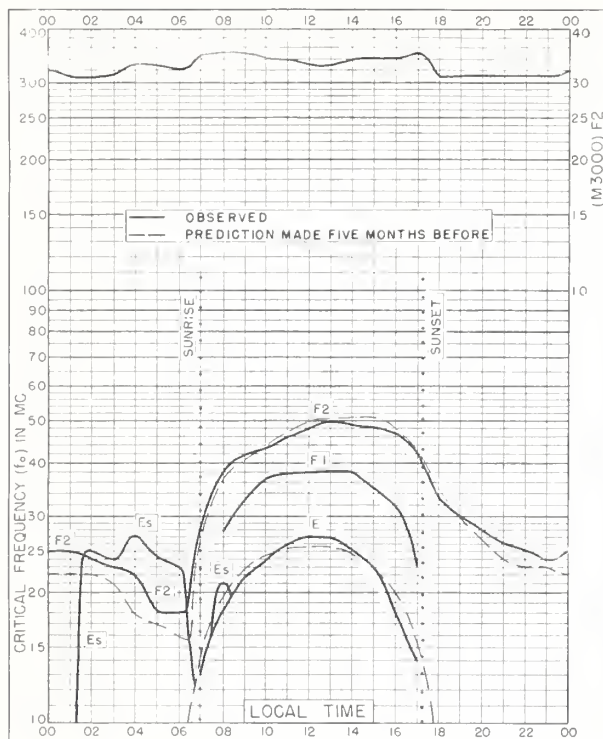


Fig. 69. CHRISTCHURCH, NEW ZEALAND  
43.6°S, 172.8°E  
AUGUST 1954

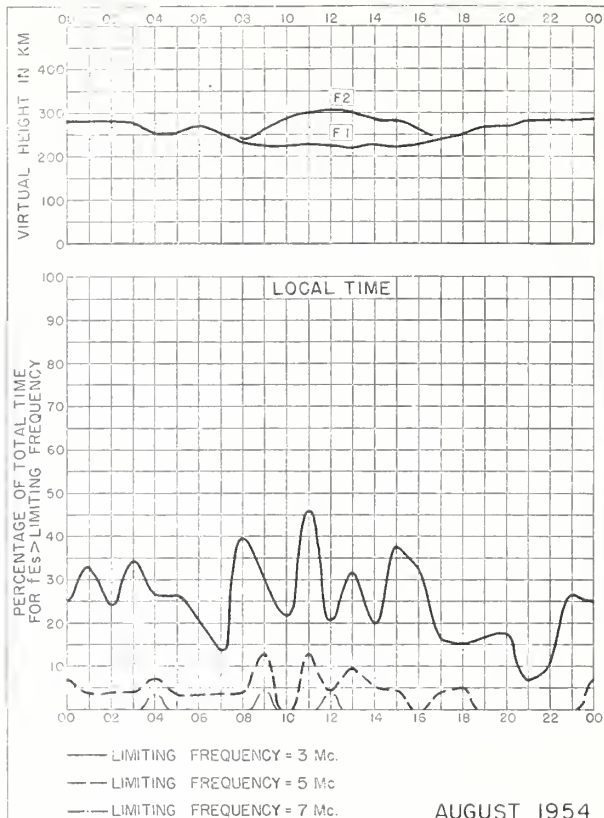


Fig. 70. CHRISTCHURCH, NEW ZEALAND  
AUGUST 1954

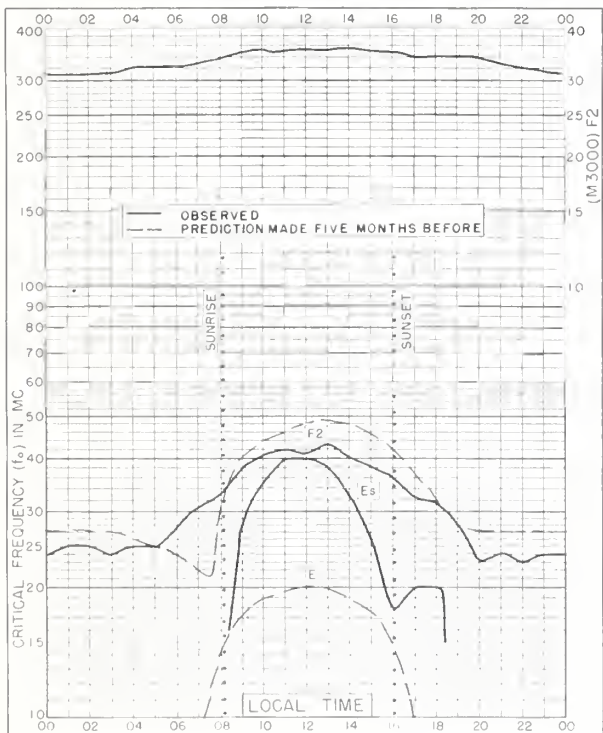


Fig. 71. DECEPTION I.  
63.0°S, 60.7°W  
AUGUST 1954

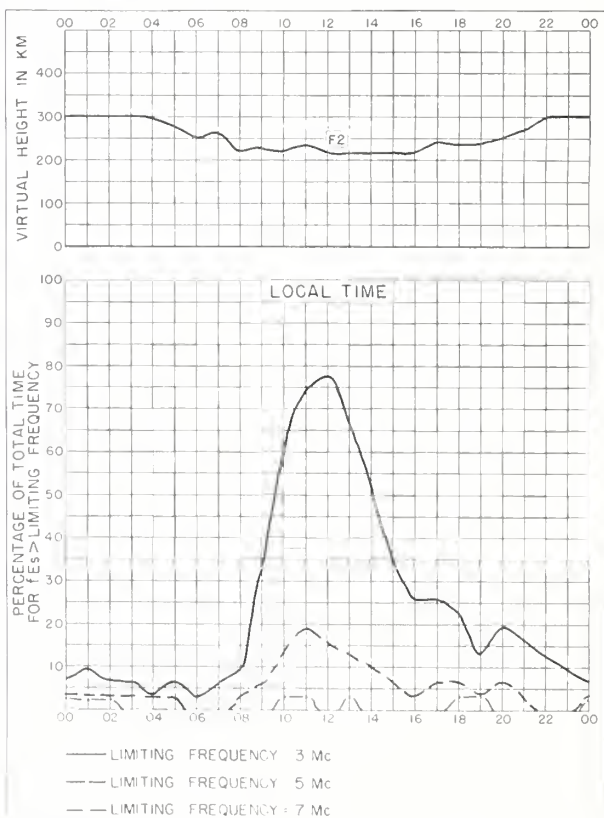


Fig. 72. DECEPTION I.  
AUGUST 1954



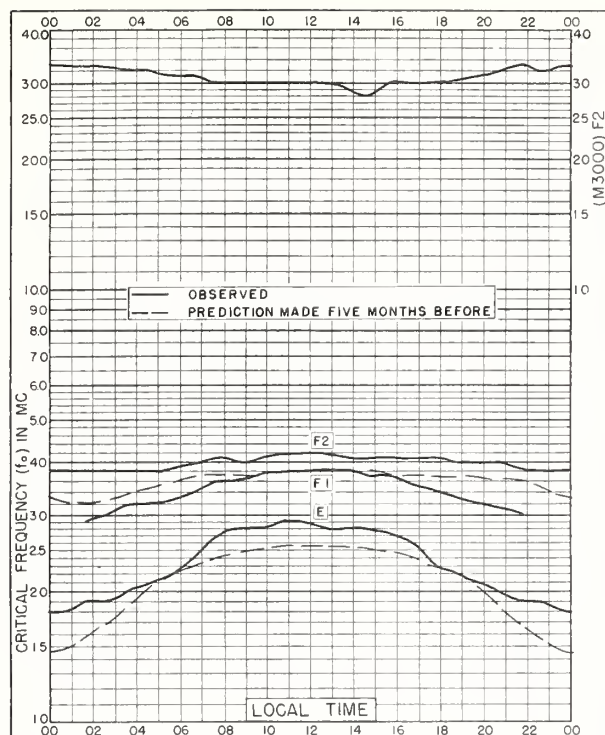


Fig. 73. RESOLUTE BAY, CANADA  
74.7°N, 94.9°W

JULY 1954

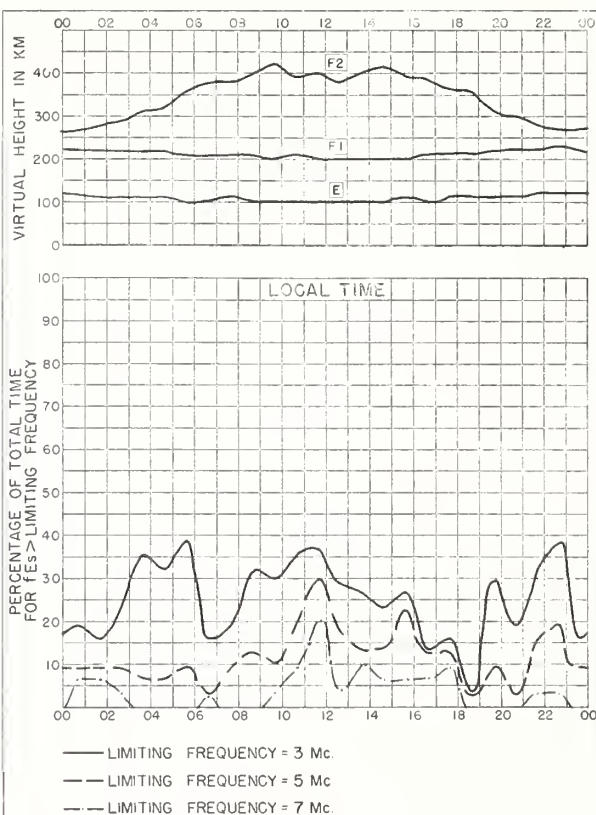


Fig. 74. RESOLUTE BAY, CANADA

JULY 1954

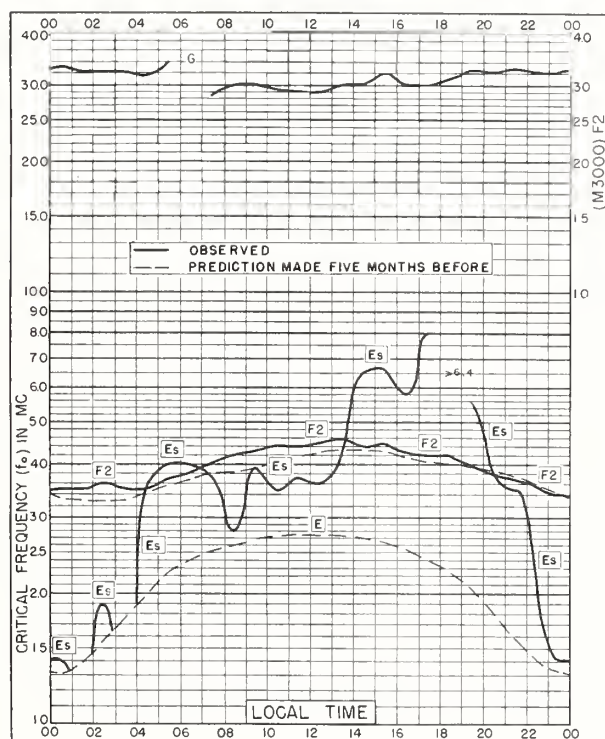


Fig. 75. GODHAVN, GREENLAND  
69.2°N, 53.5°W

JULY 1954

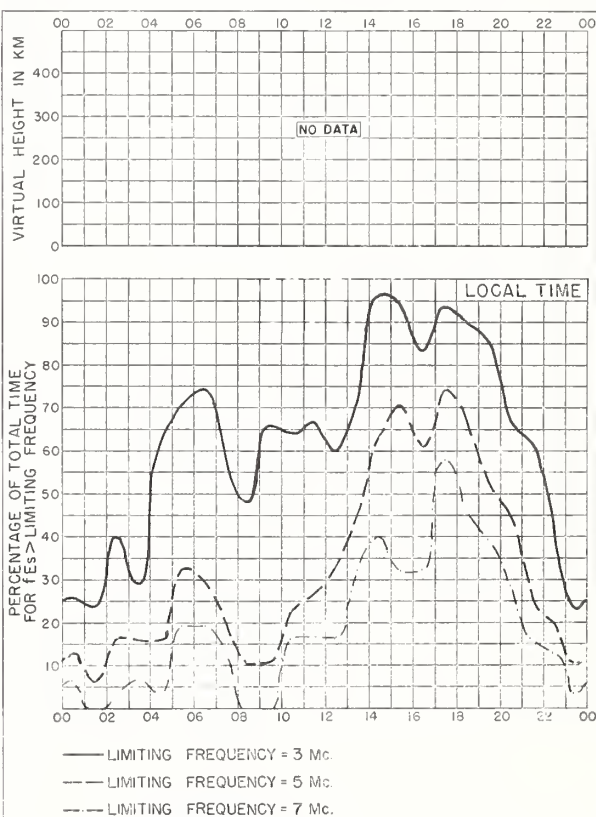


Fig. 76. GODHAVN, GREENLAND

JULY 1954

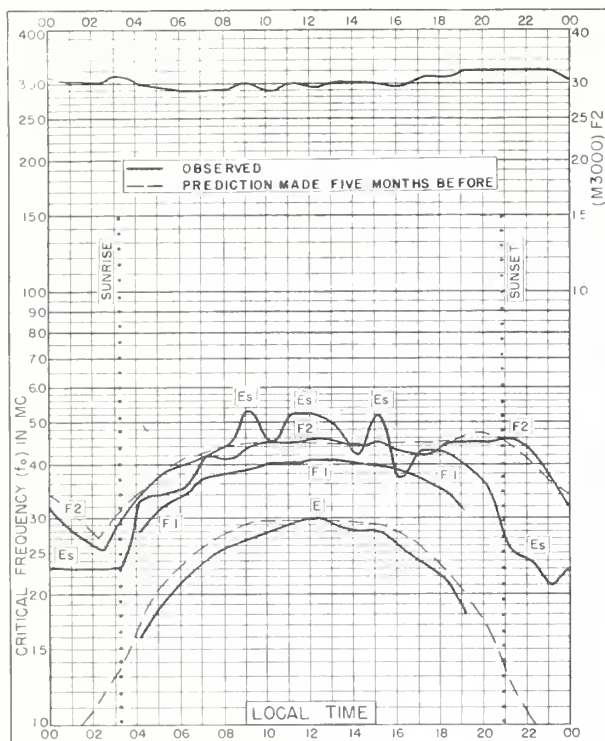


Fig. 77. UPSALA, SWEDEN  
59.8°N, 17.6°E

JULY 1954

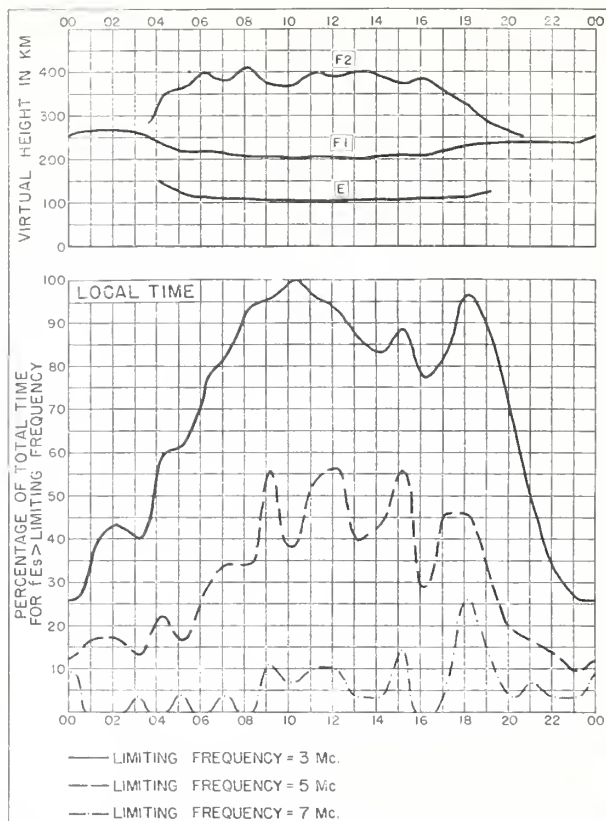


Fig. 78. UPSALA, SWEDEN

JULY 1954

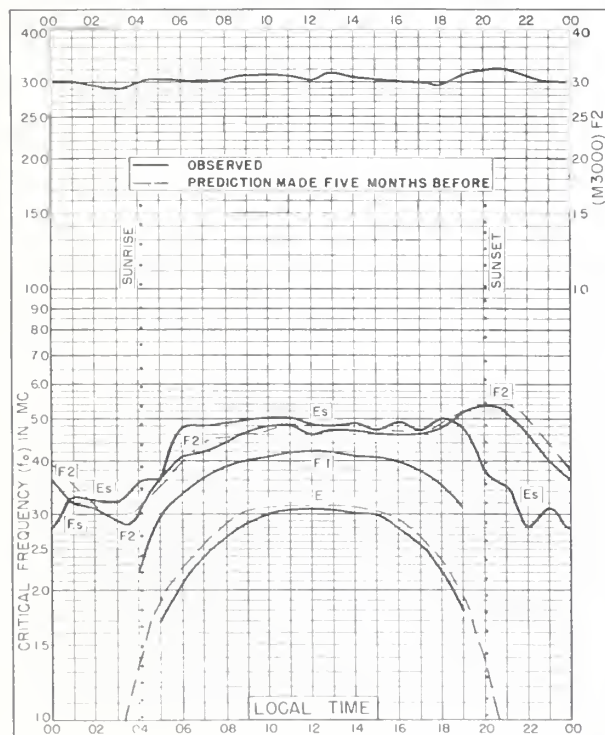


Fig. 79. SLOUGH, ENGLAND  
51.5°N, 0.6°W

JULY 1954

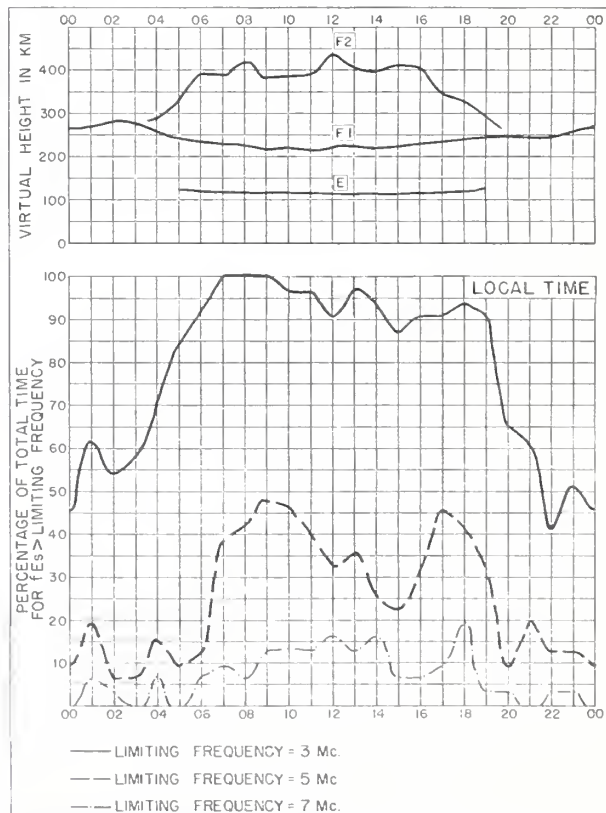


Fig. 80. SLOUGH, ENGLAND

JULY 1954

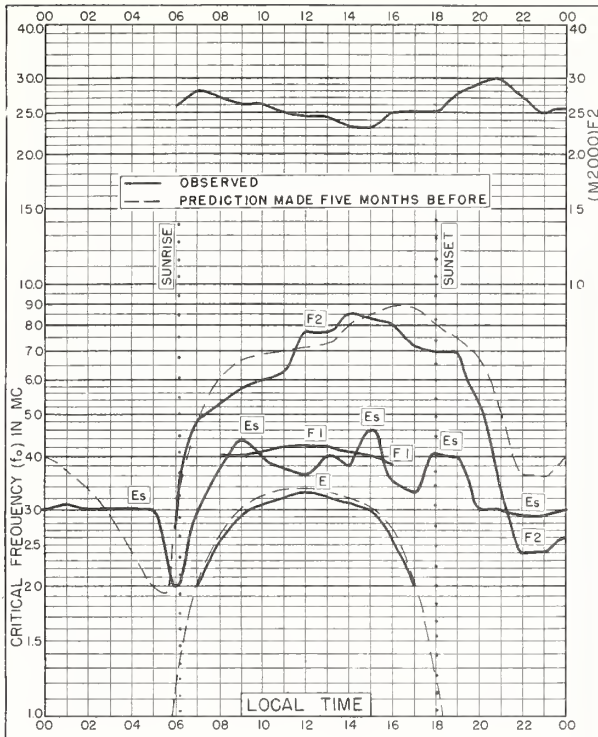


Fig. 81. LEOPOLDVILLE, BELGIAN CONGO  
4.3°S, 15.3°E  
JULY 1954

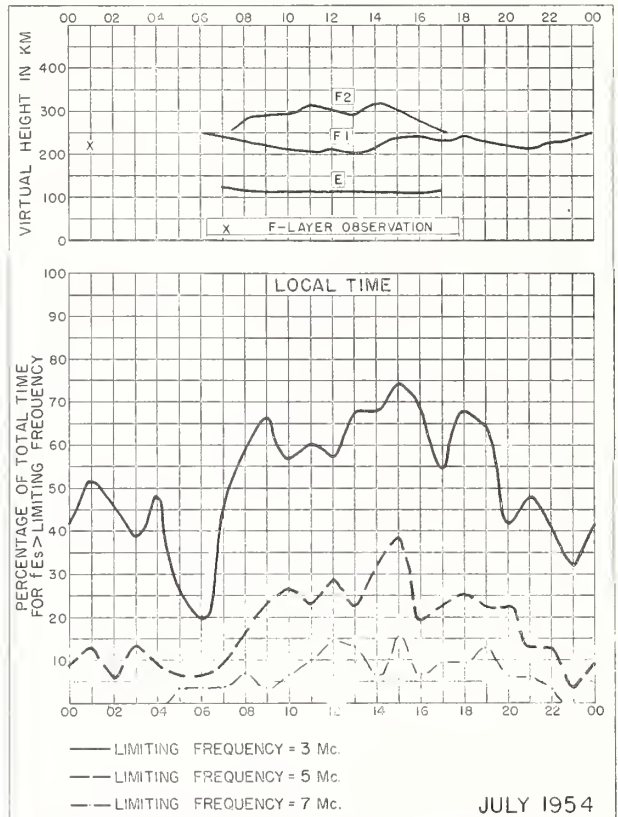


Fig. 82. LEOPOLDVILLE, BELGIAN CONGO  
JULY 1954

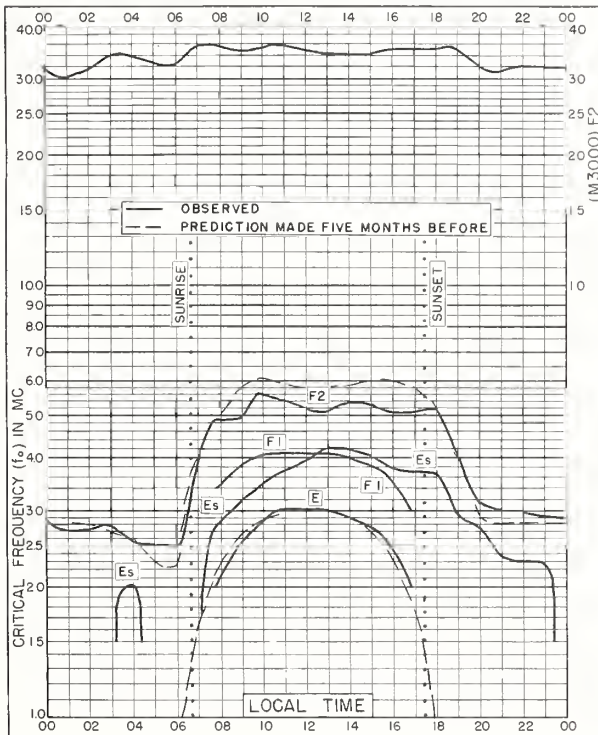


Fig. 83. RAROTONGA I.  
21.3°S, 159.8°W  
JULY 1954

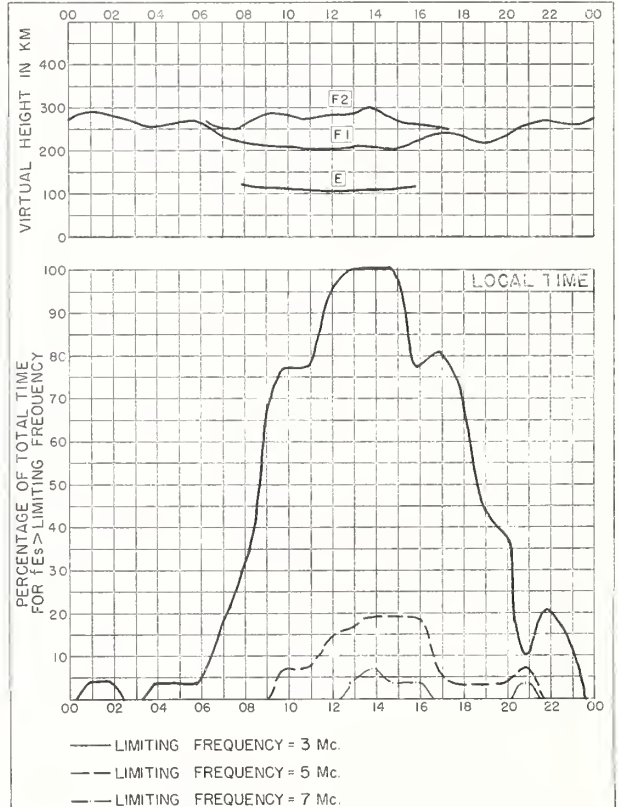


Fig. 84. RAROTONGA I.  
JULY 1954



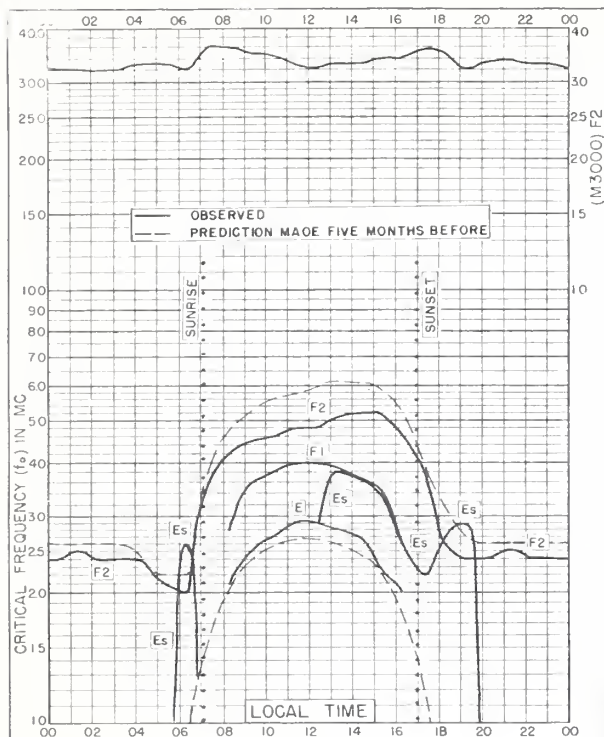


Fig. 85. CAPETOWN, UNION OF S. AFRICA  
34.2°S, 18.3°E  
JULY 1954

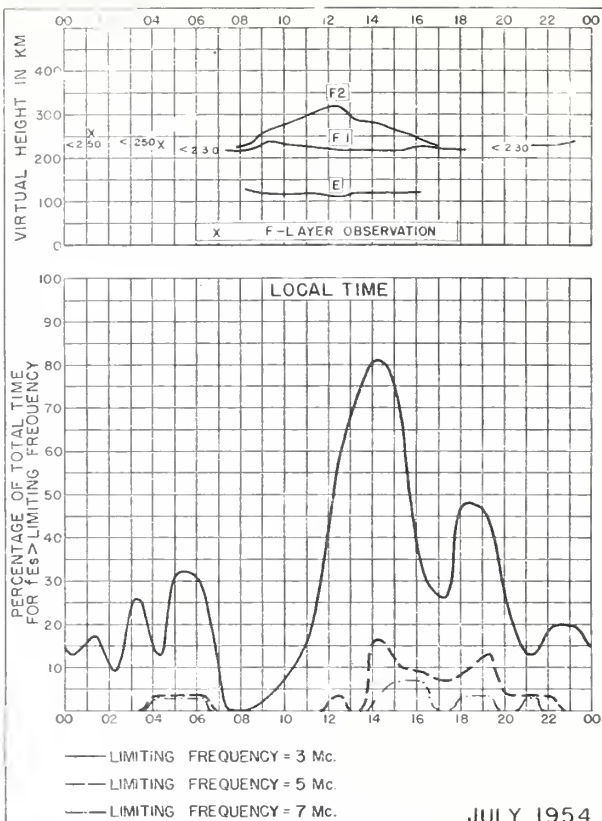


Fig. 86. CAPETOWN, UNION OF S. AFRICA

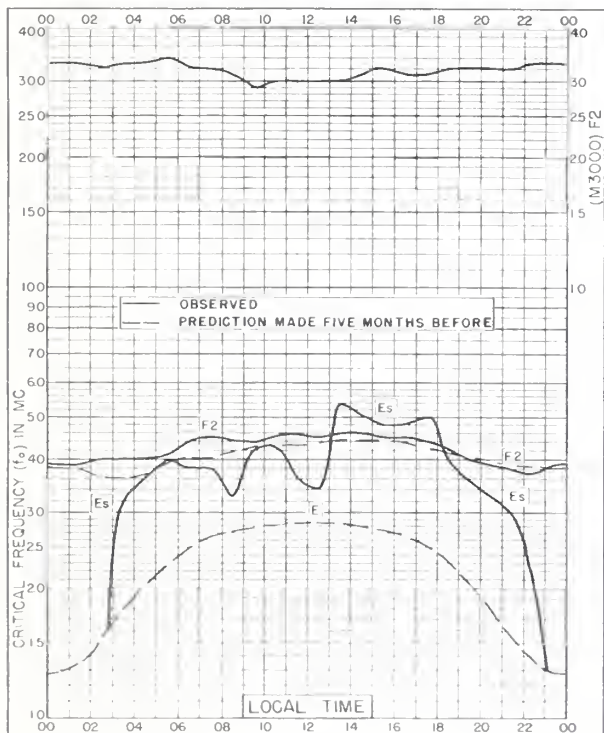


Fig. 87. GODHAVN, GREENLAND  
69°2'N, 53.5°W  
JUNE 1954

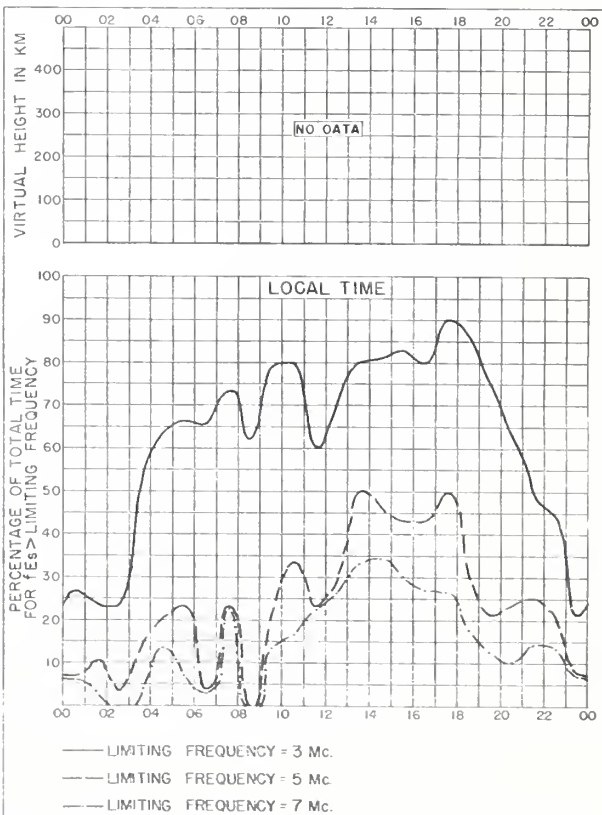


Fig. 88. GODHAVN, GREENLAND  
JUNE 1954

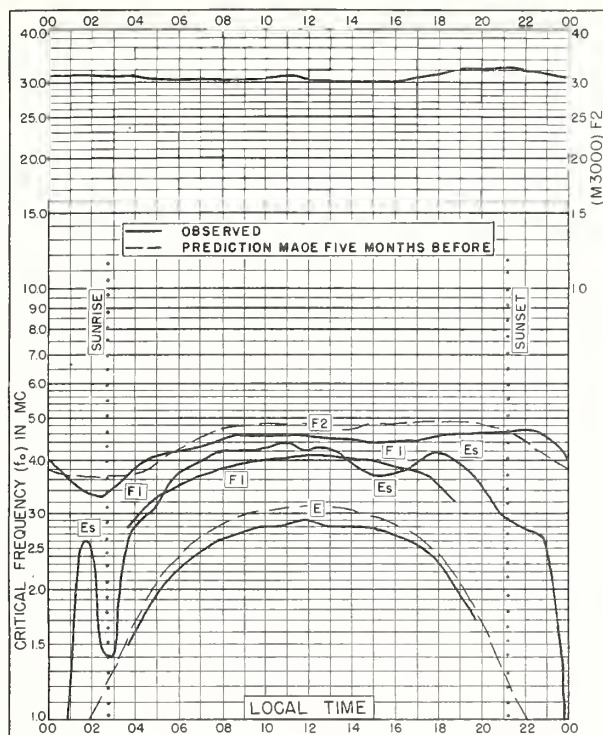


Fig. 89. OSLO, NORWAY  
60.0°N, 11.1°E

JUNE 1954

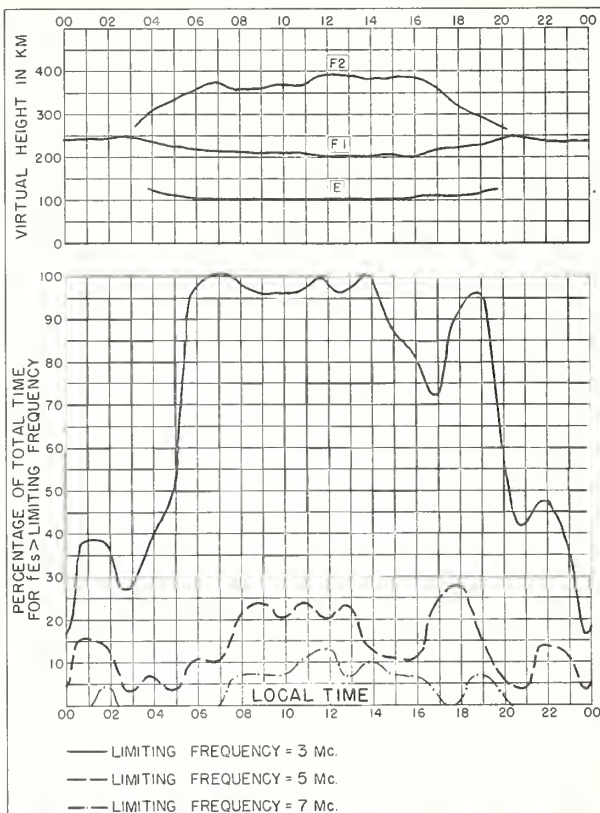


Fig. 90. OSLO, NORWAY

JUNE 1954

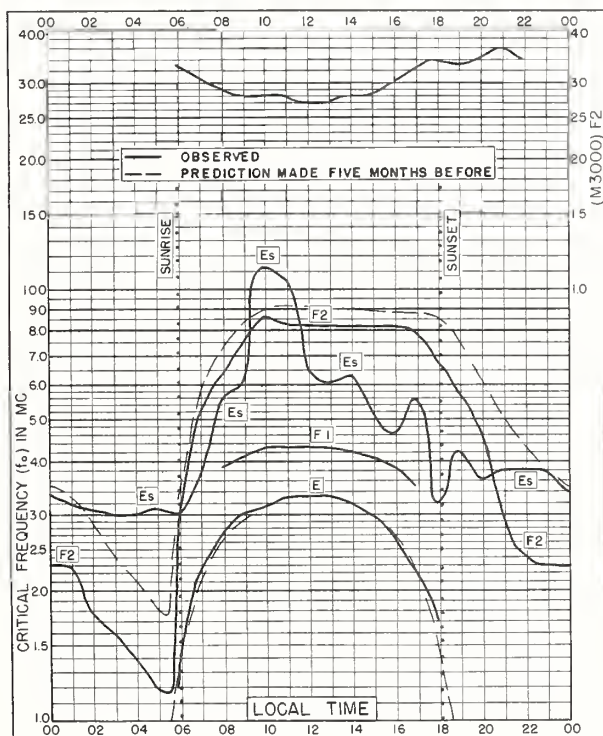


Fig. 91. SINGAPORE, BRITISH MALAYA  
1.3°N, 103.8°E

JUNE 1954

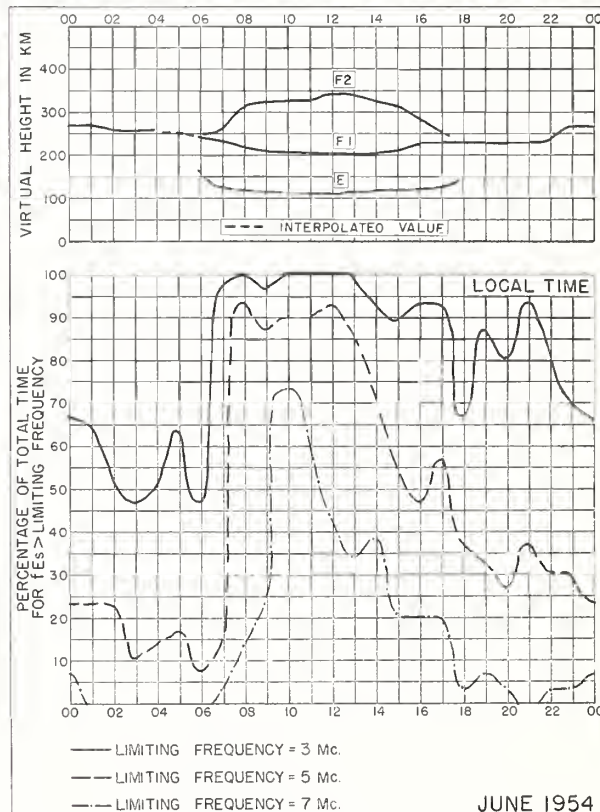


Fig. 92. SINGAPORE, BRITISH MALAYA

JUNE 1954



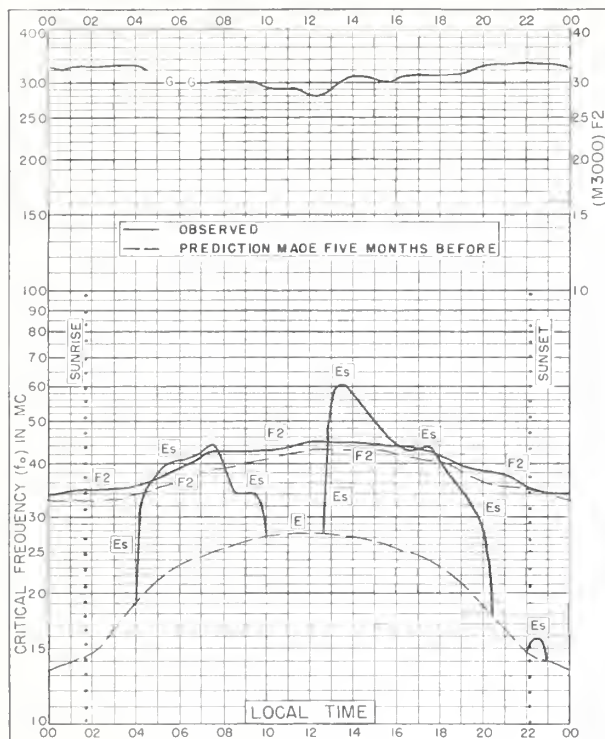


Fig. 93. GODHAVN, GREENLAND  
69.2°N, 53.5°W

MAY 1954

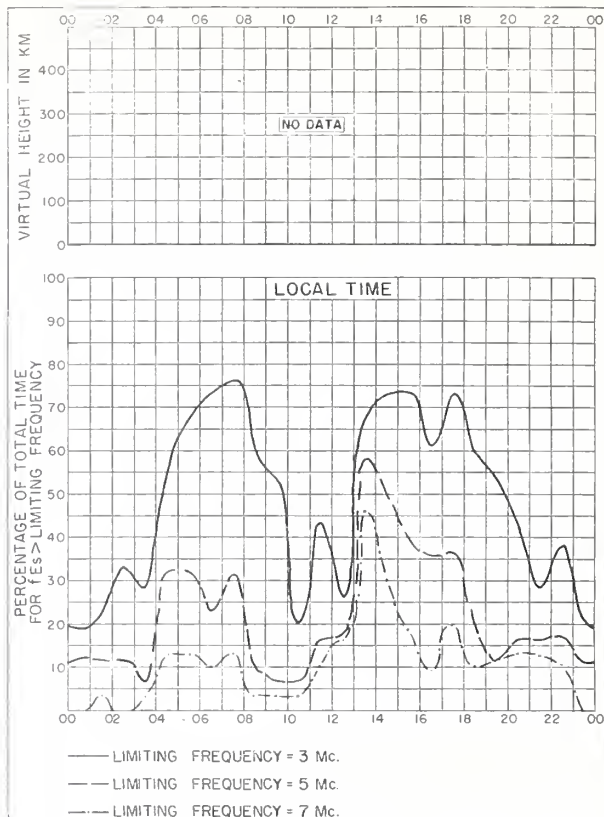


Fig. 94. GODHAVN, GREENLAND

MAY 1954

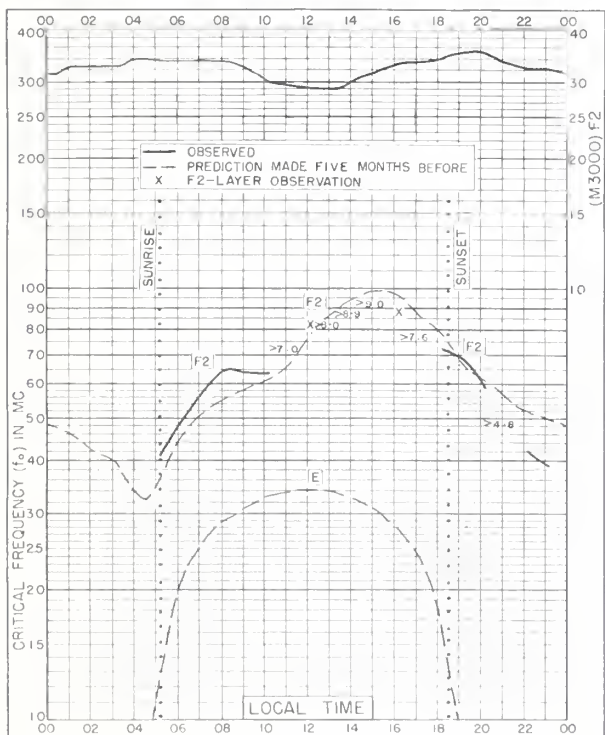


Fig. 95. DELHI, INDIA  
28.6°N, 77.1°E

MAY 1954

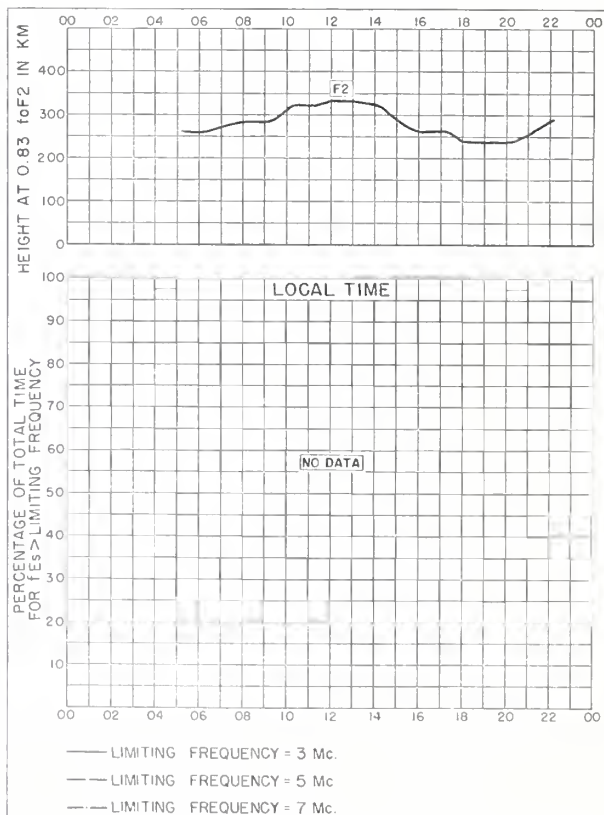


Fig. 96. DELHI, INDIA

MAY 1954

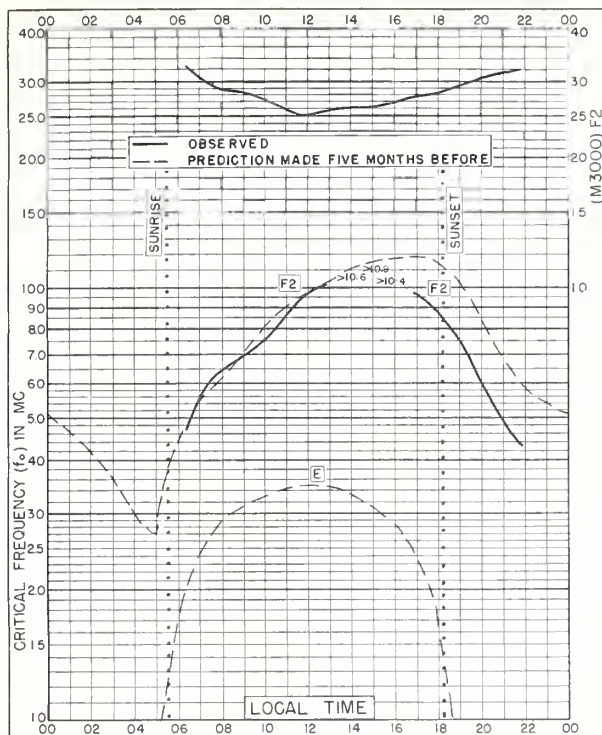


Fig. 97. BOMBAY, INDIA  
19.0°N, 73.0°E

MAY 1954

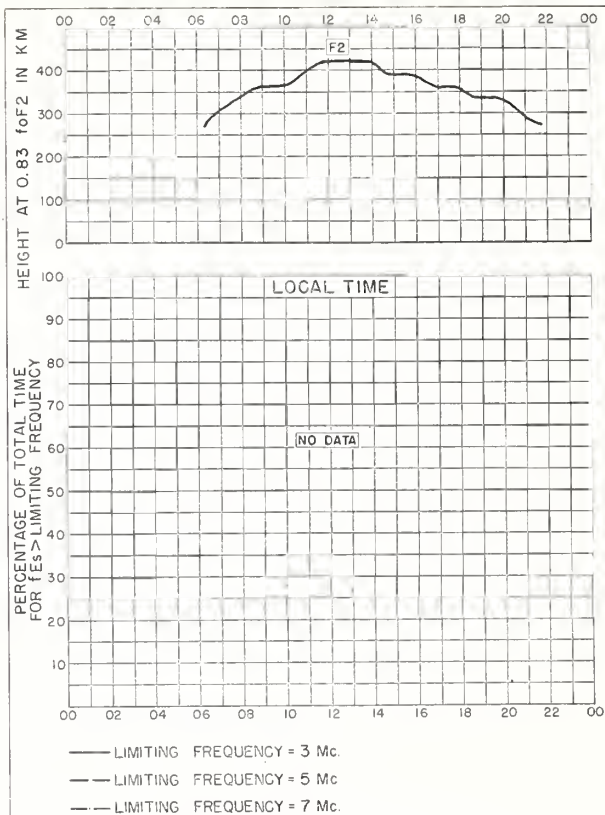


Fig. 98. BOMBAY, INDIA

MAY 1954

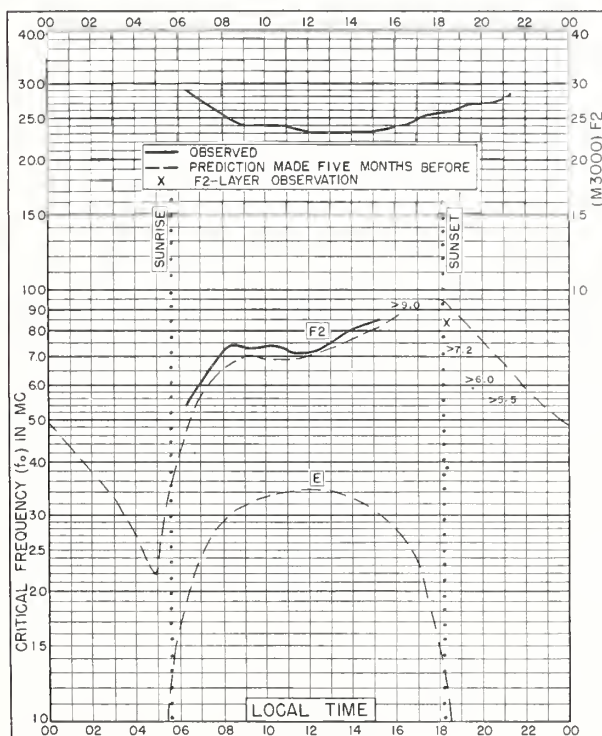


Fig. 99. MADRAS, INDIA  
13.0°N, 80.2°E

MAY 1954

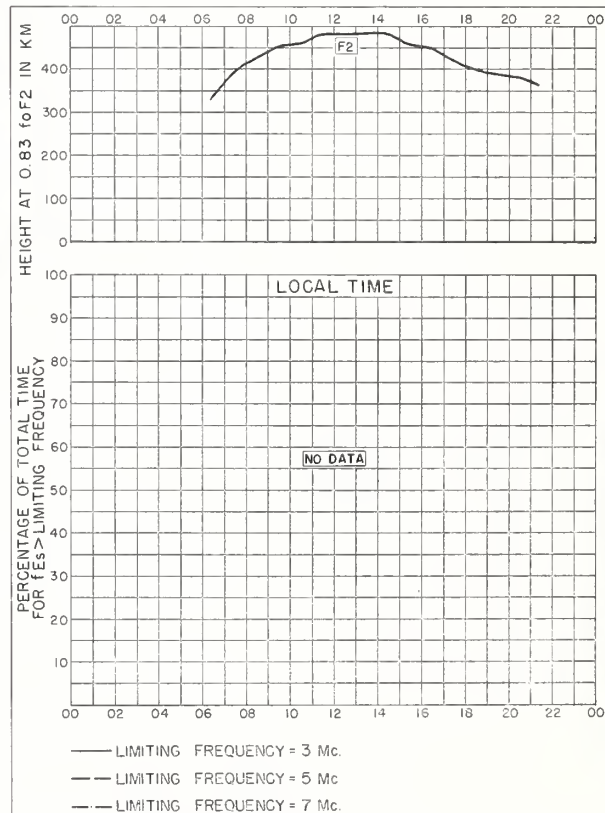


Fig. 100. MADRAS, INDIA

MAY 1954

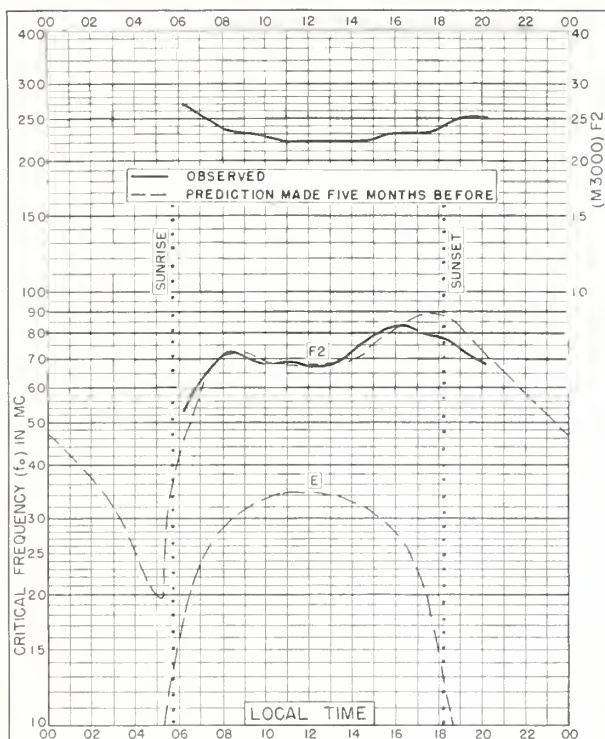


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MAY 1954

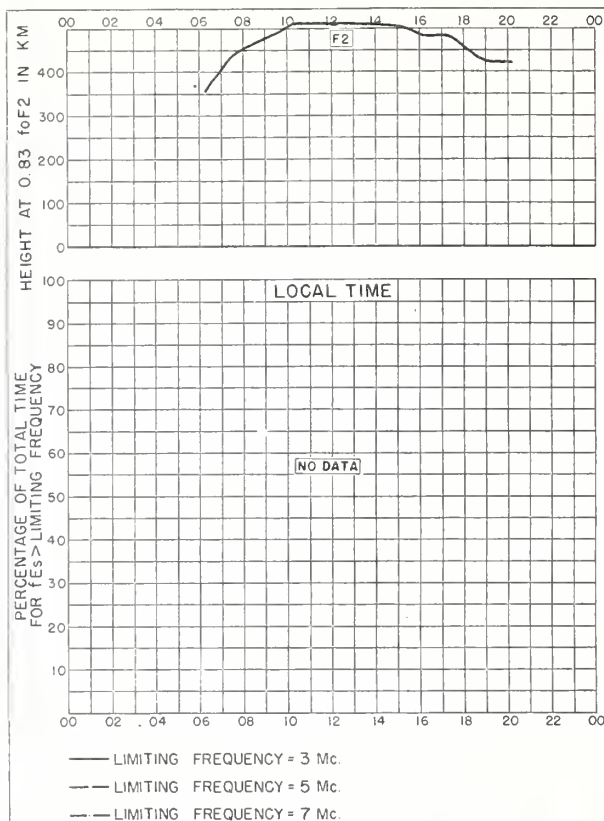


Fig. 102. TIRUCHY, INDIA

MAY 1954

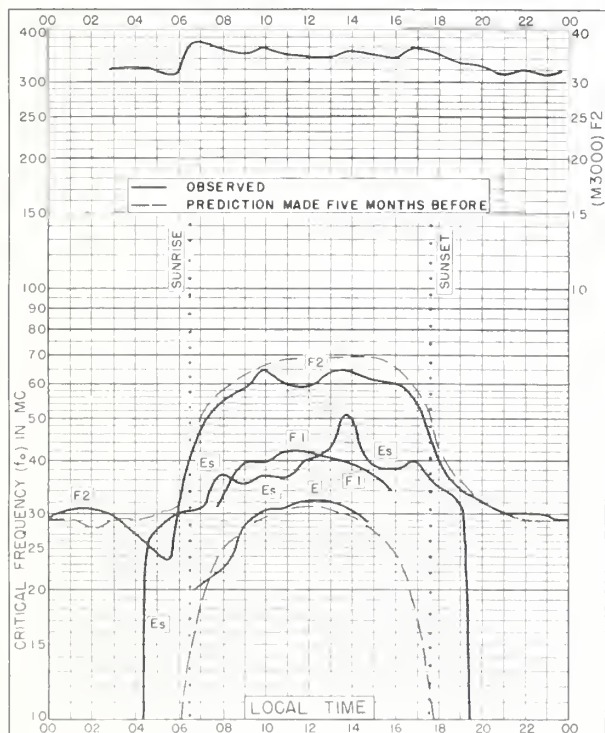


Fig. 103. TOWNSVILLE, AUSTRALIA  
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MAY 1954

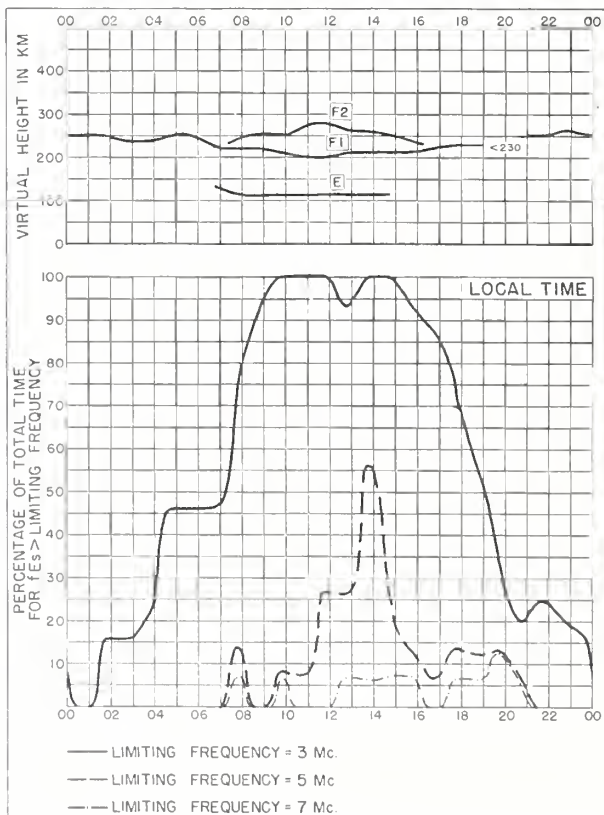


Fig. 104. TOWNSVILLE, AUSTRALIA

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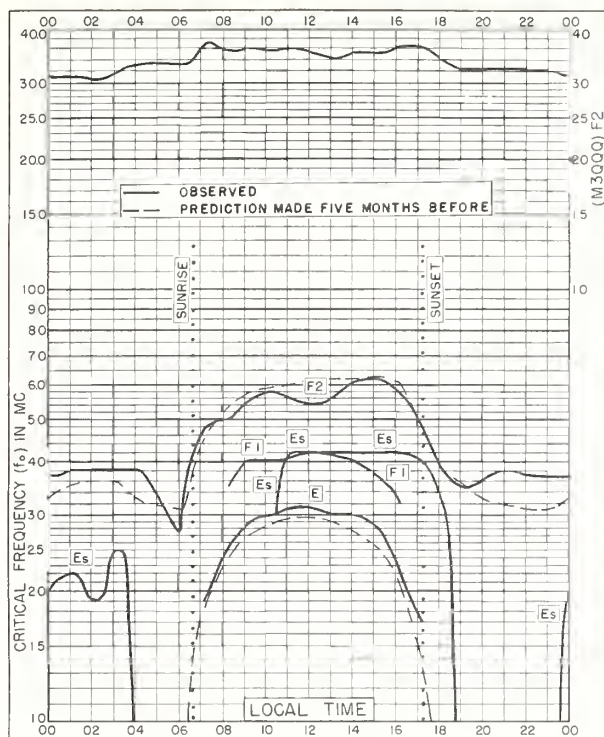


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MAY 1954

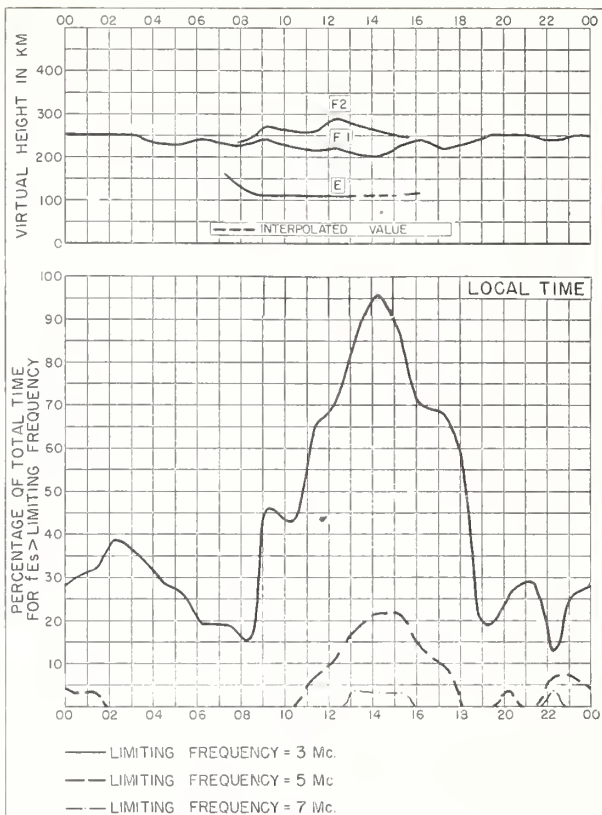


Fig. 106. BRISBANE, AUSTRALIA

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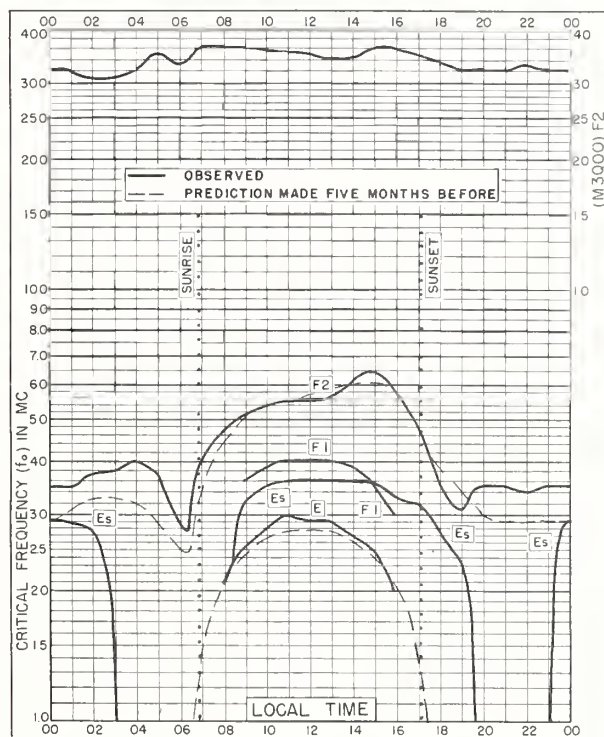


Fig. 107. CANBERRA, AUSTRALIA  
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MAY 1954

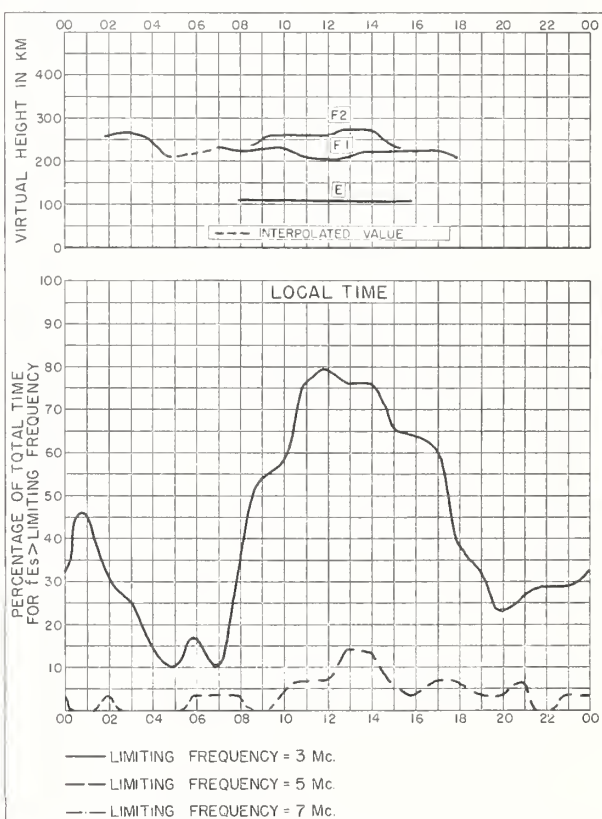


Fig. 108. CANBERRA, AUSTRALIA

MAY 1954

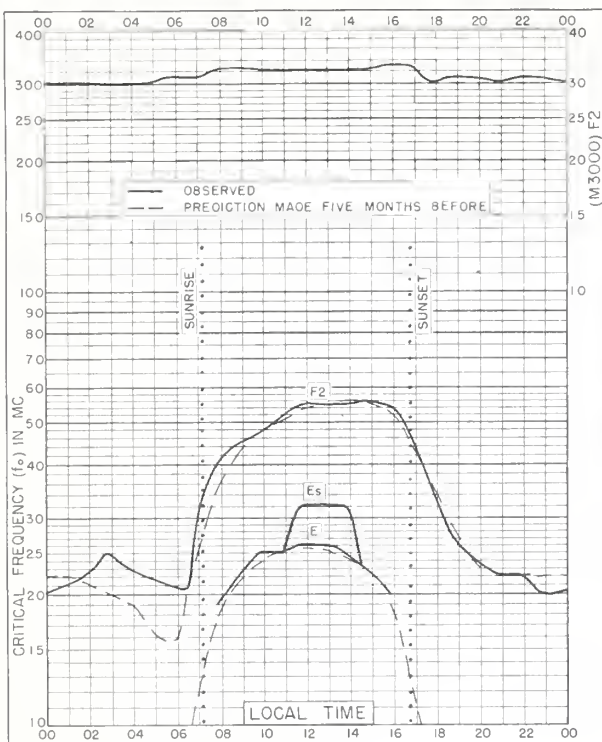


Fig. 109. HOBART, TASMANIA  
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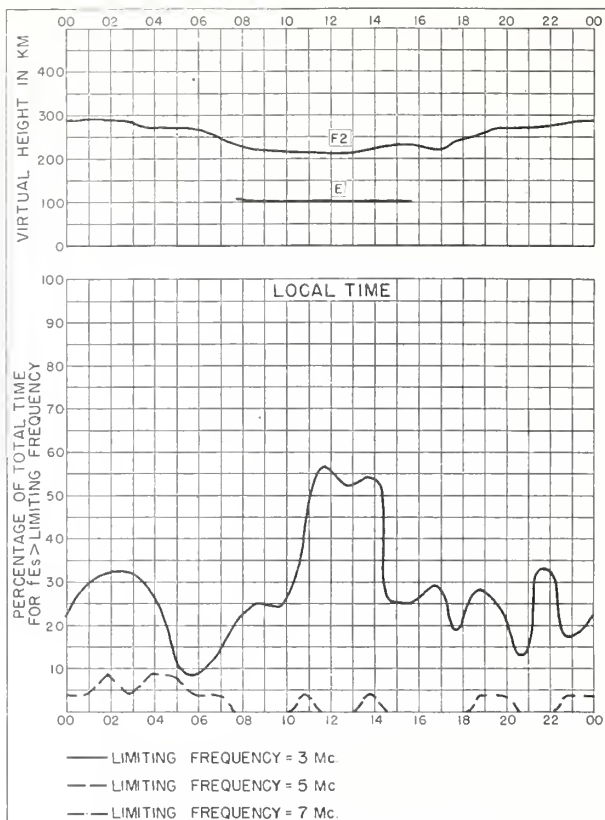


Fig. 110. HOBART, TASMANIA

MAY 1954

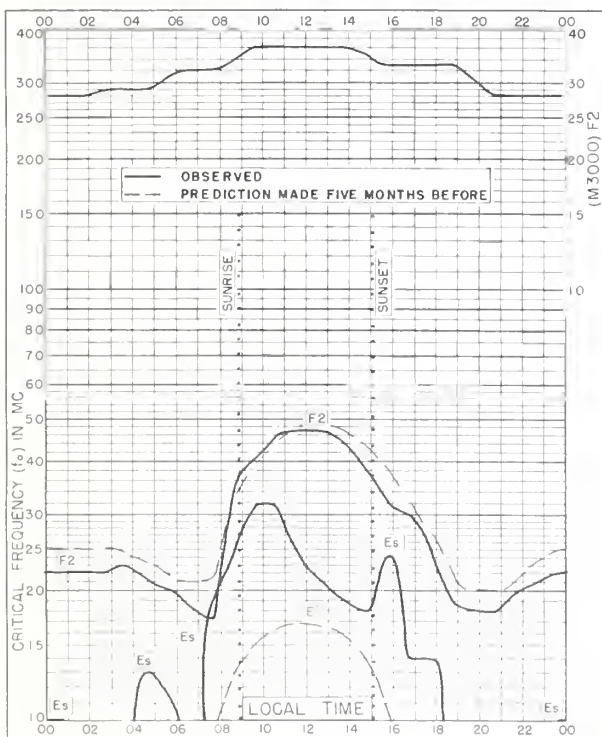


Fig. 111. PORT LOCKROY  
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MAY 1954

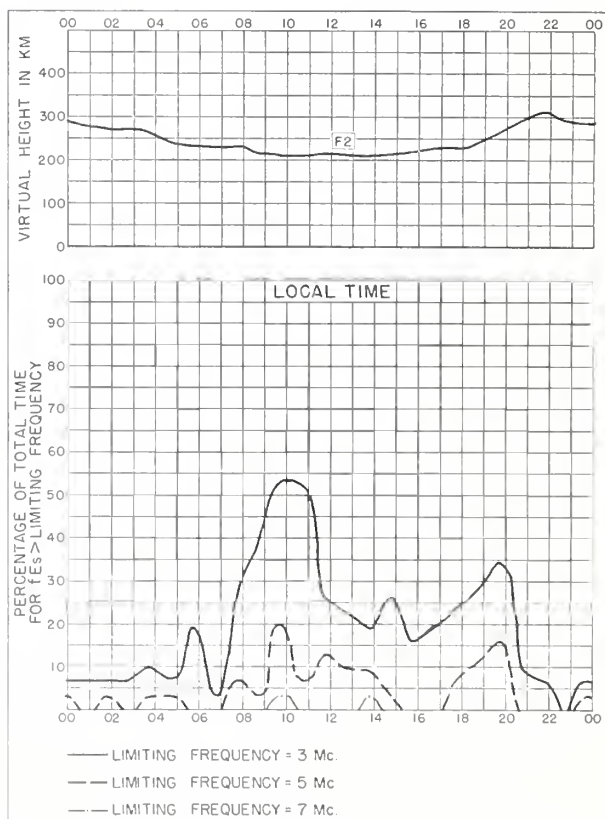


Fig. 112. PORT LOCKROY

MAY 1954



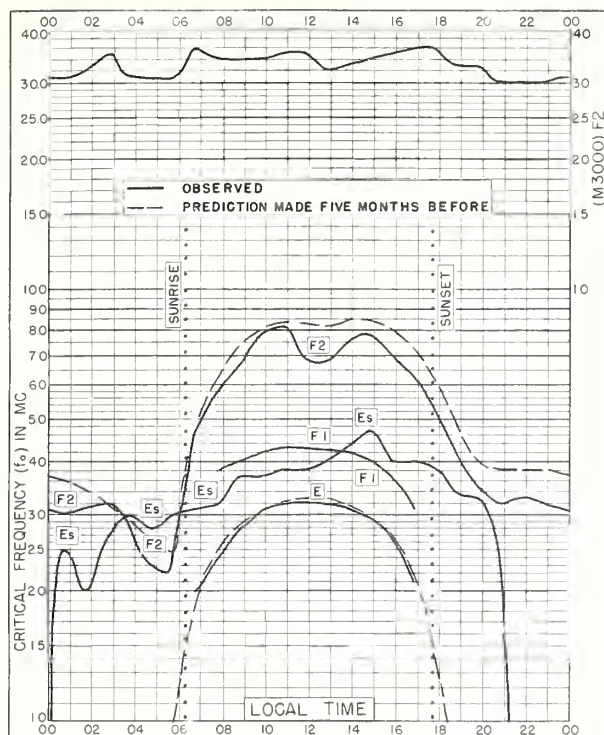


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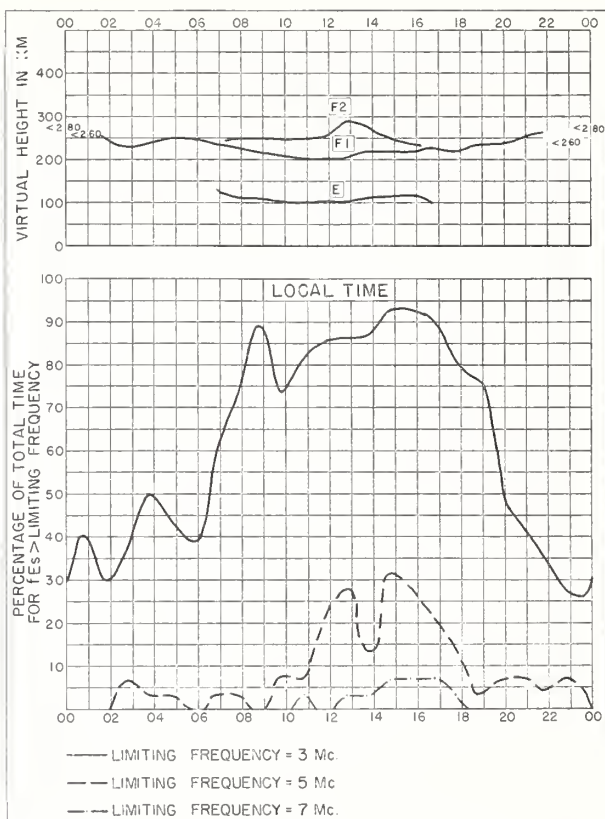


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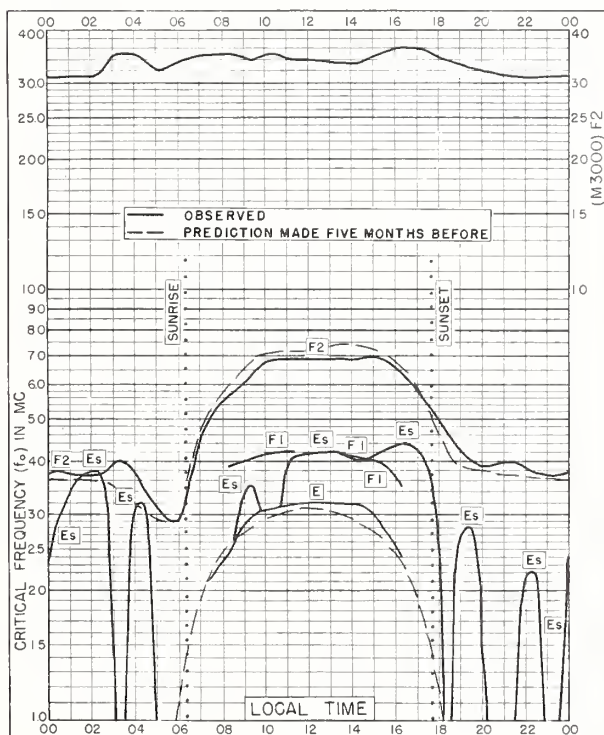


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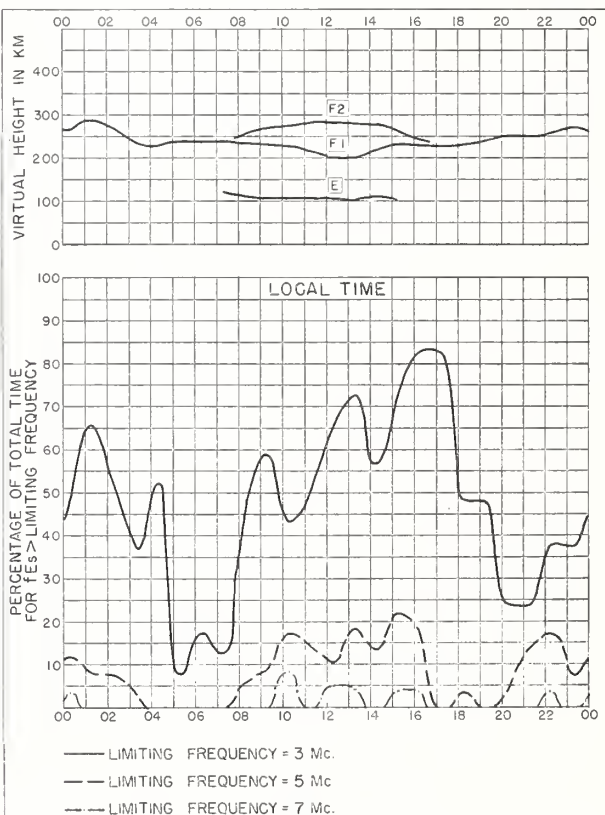


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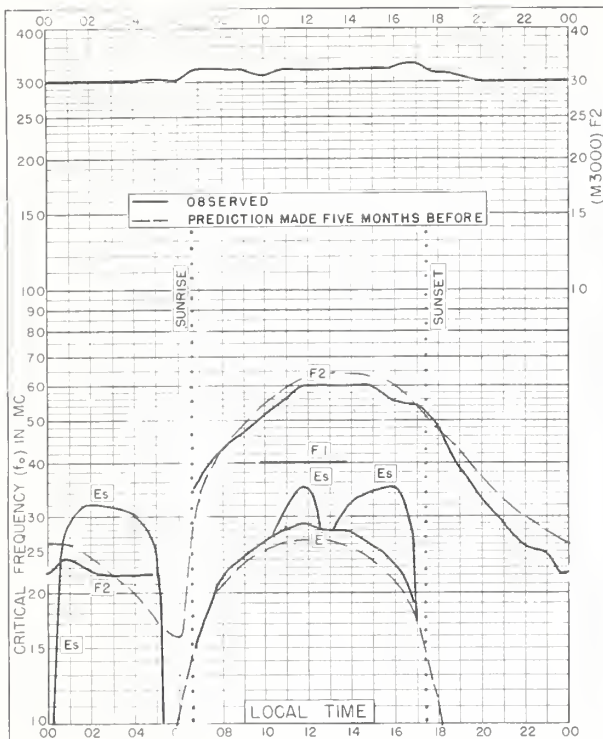


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APRIL 1954

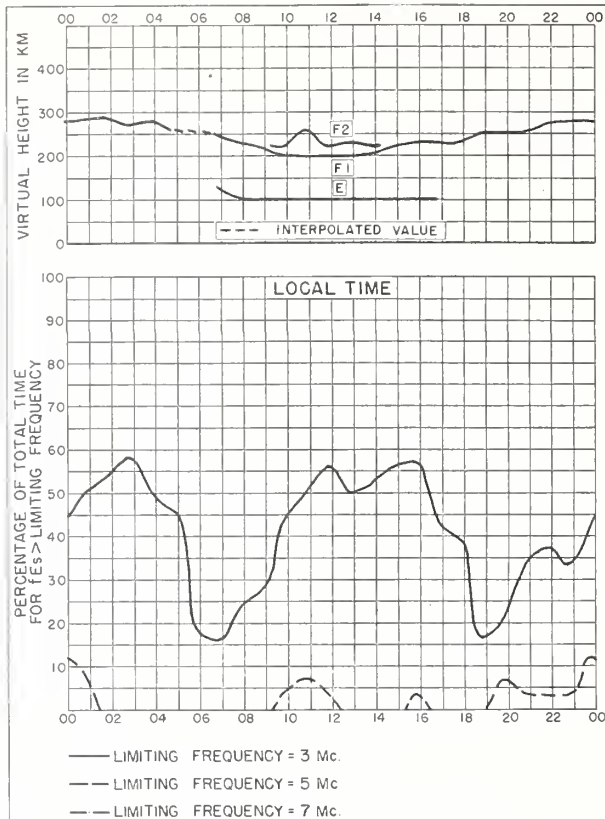


Fig. 118. HOBART, TASMANIA

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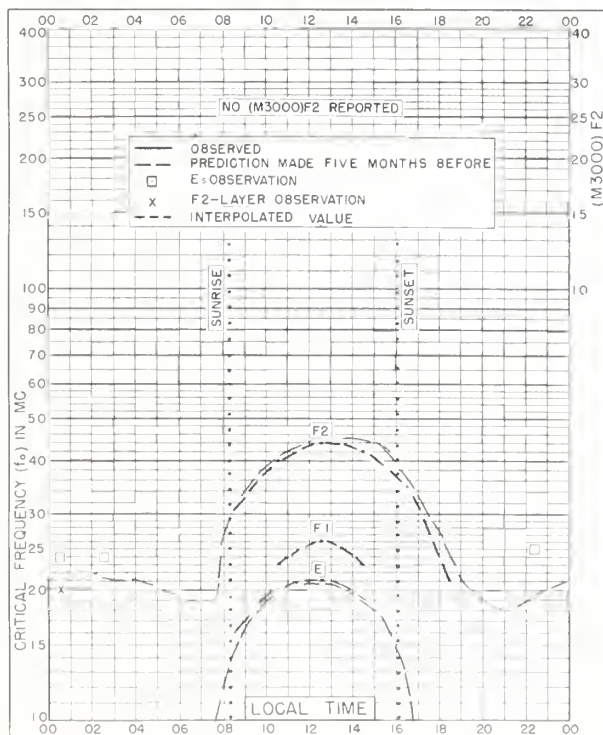


Fig. 119. LULEA, SWEDEN  
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FEBRUARY 1954

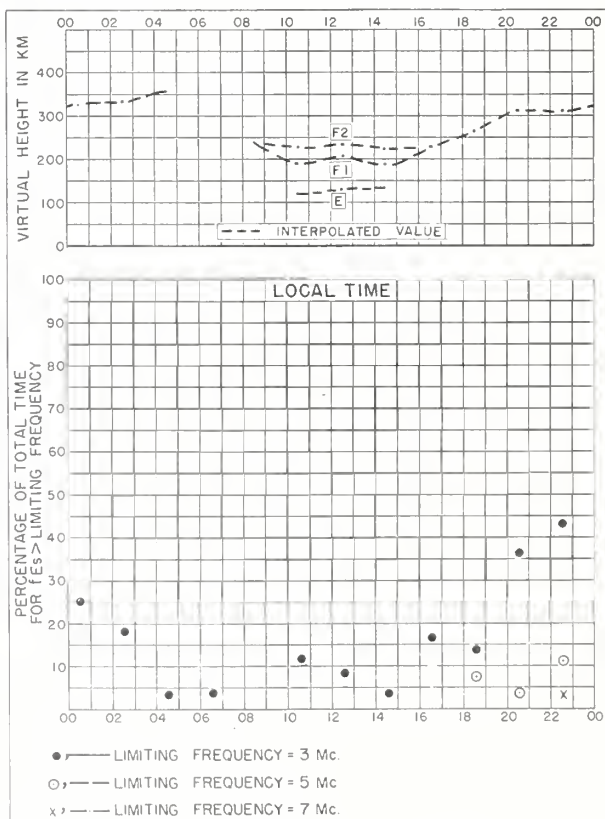


Fig. 120. LULEA, SWEDEN

FEBRUARY 1954

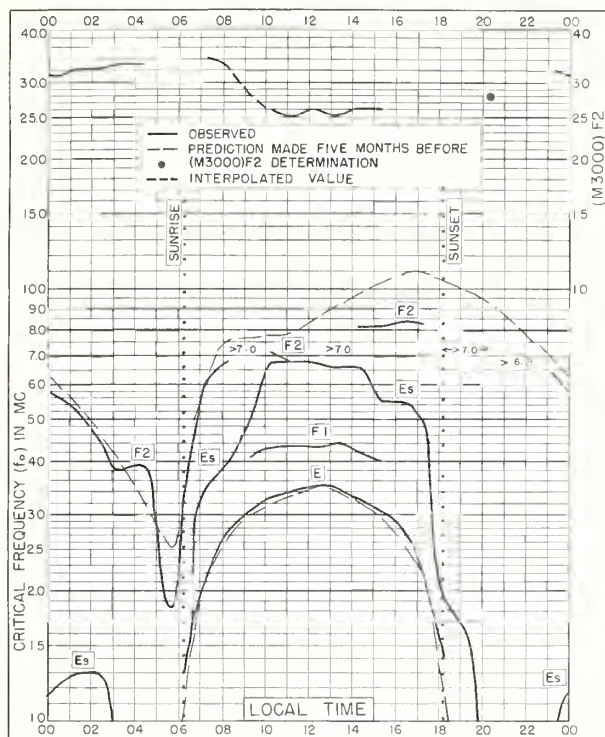


Fig. 121. IBADAN, NIGERIA  
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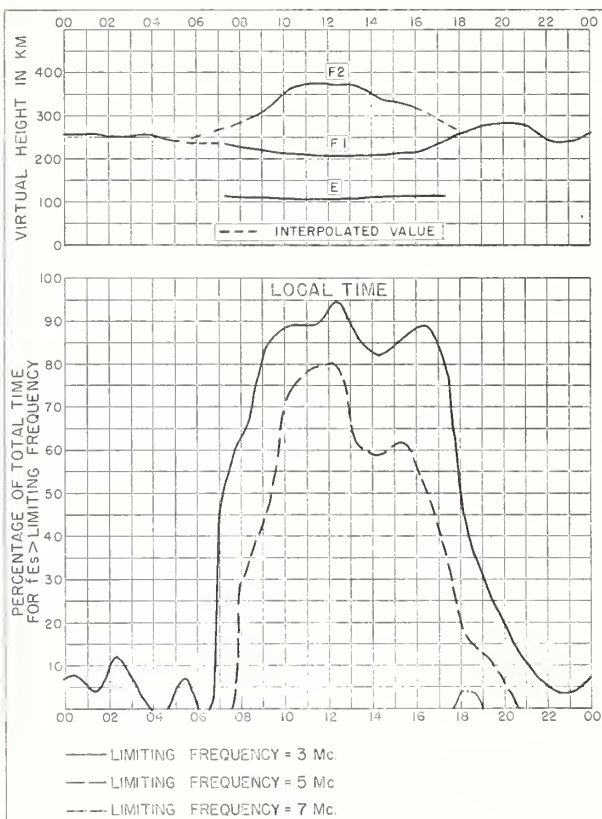


Fig. 122. IBADAN, NIGERIA

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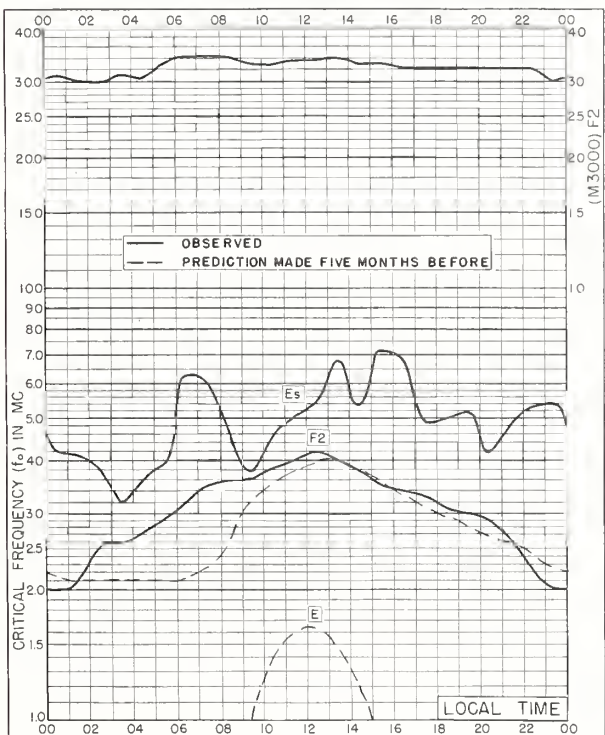


Fig. 123. GODHAVN, GREENLAND  
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JANUARY 1954

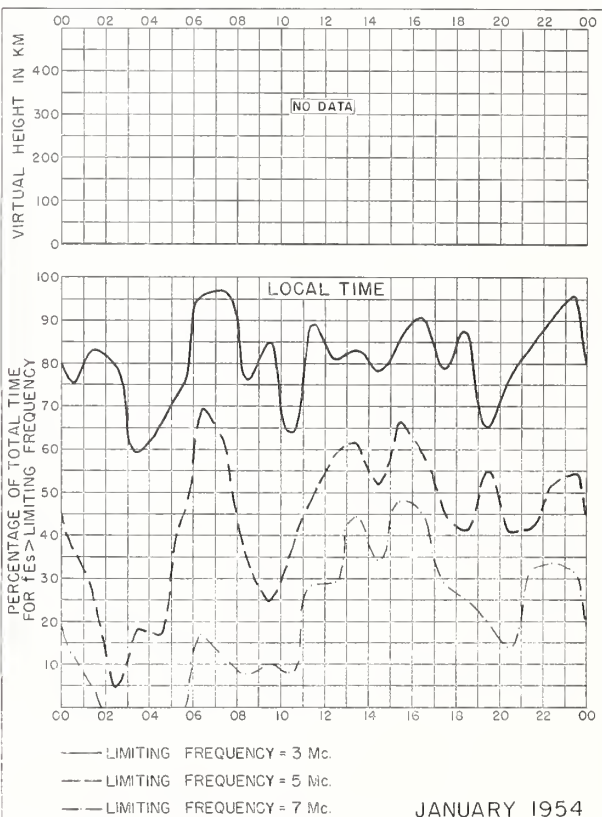


Fig. 124. GODHAVN, GREENLAND

JANUARY 1954



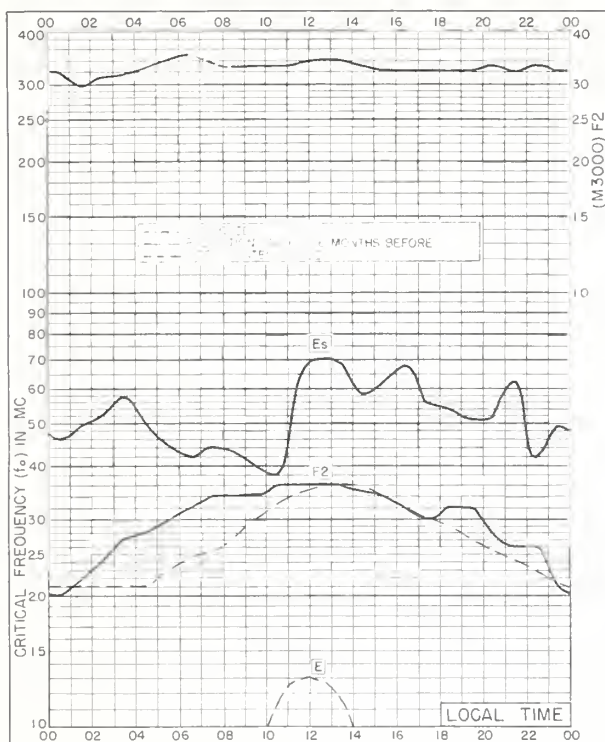


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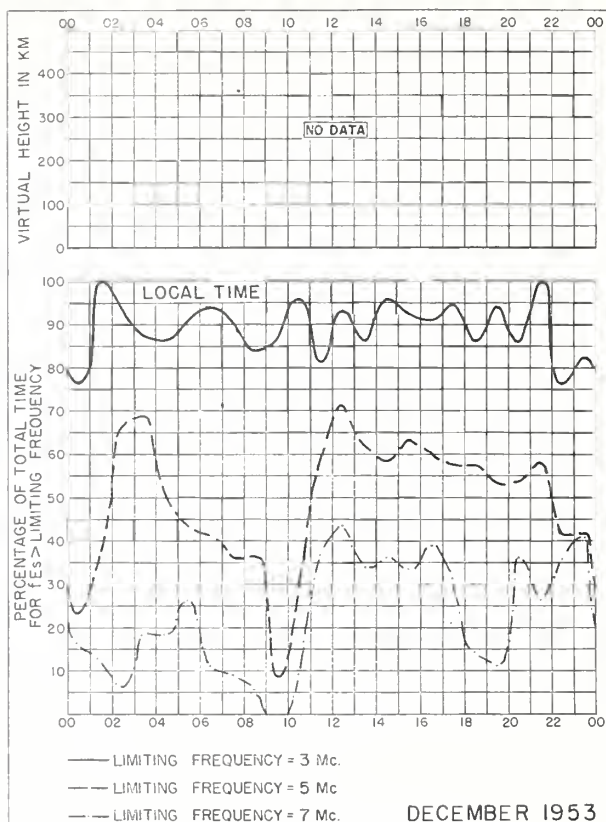


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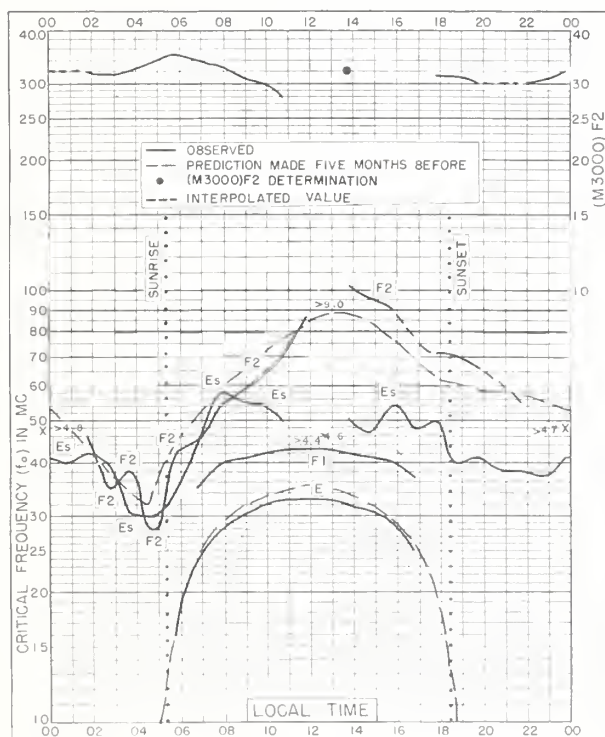


Fig. 127. TOWNSVILLE, AUSTRALIA  
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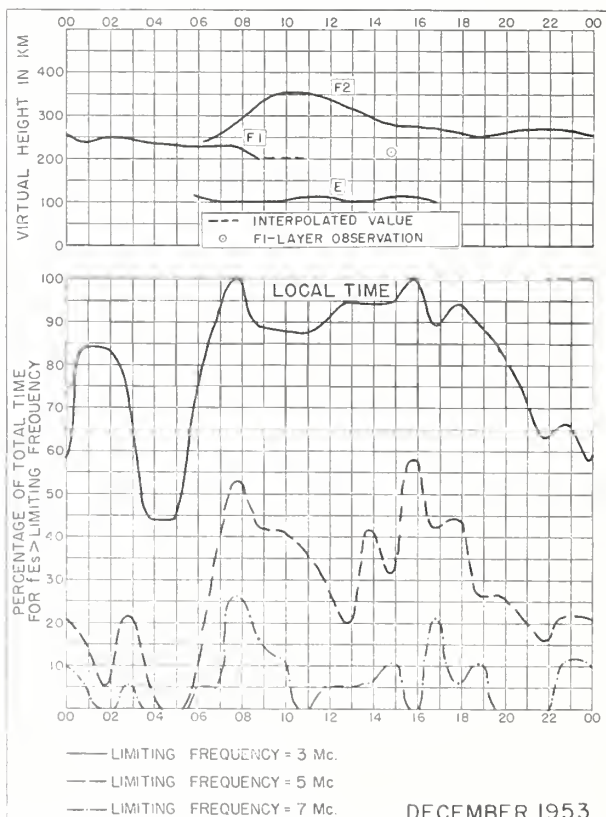
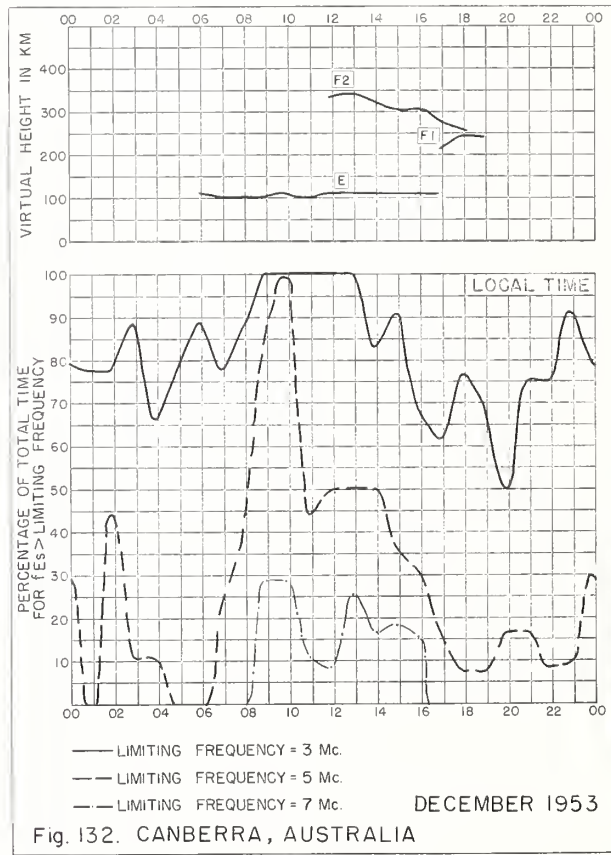
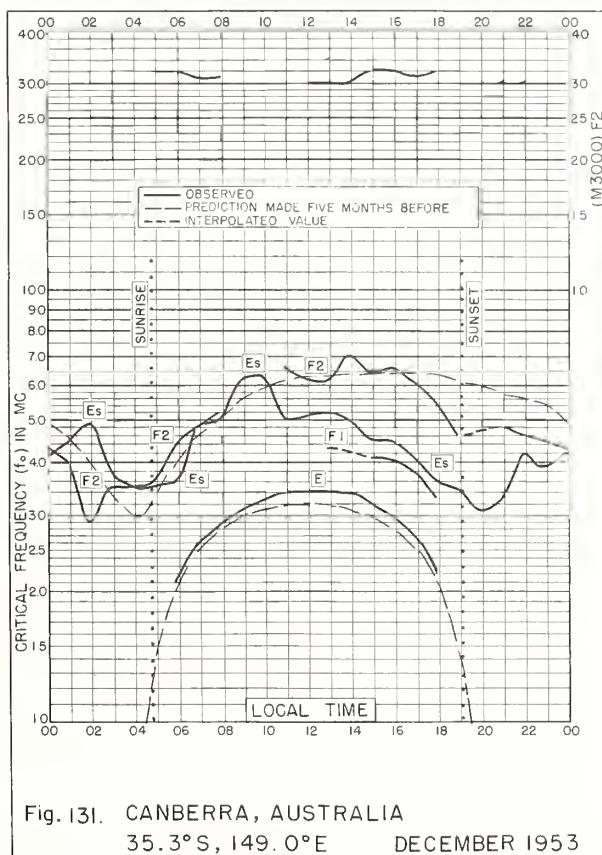
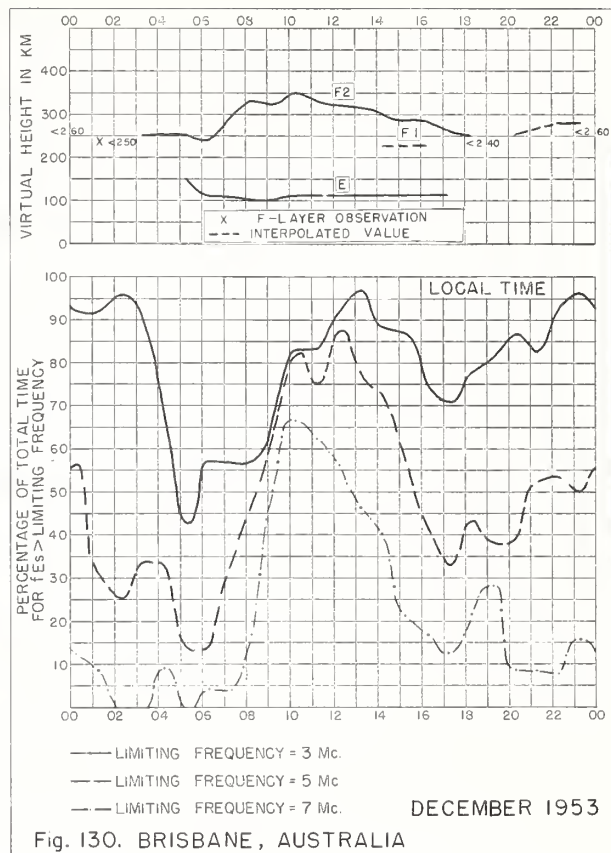
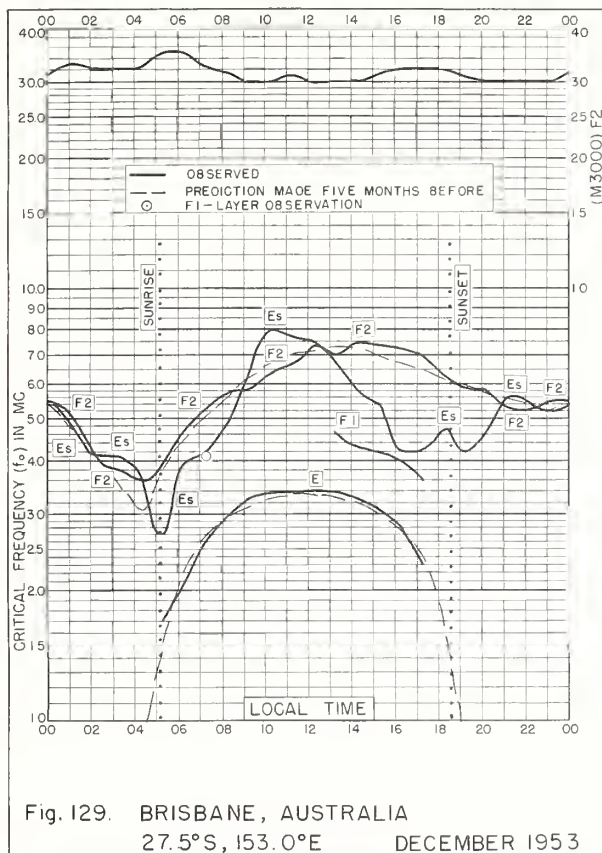


Fig. 128. TOWNSVILLE, AUSTRALIA





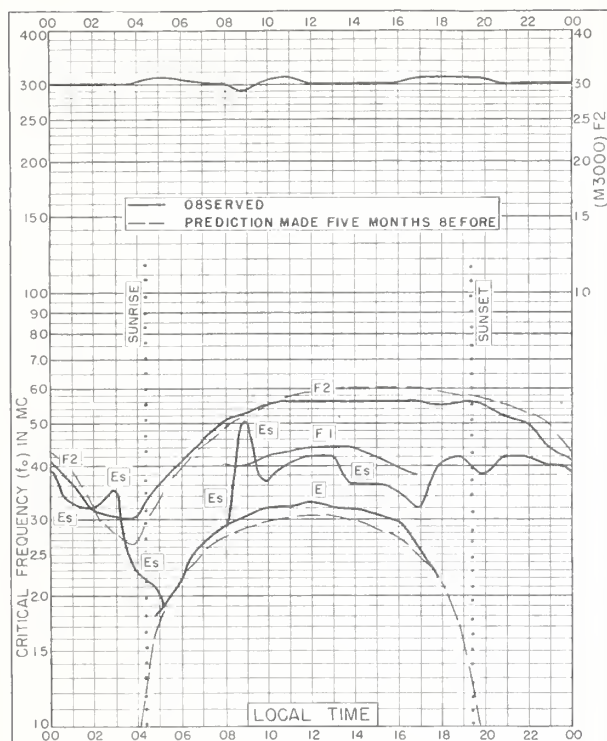


Fig. 133. HOBART, TASMANIA  
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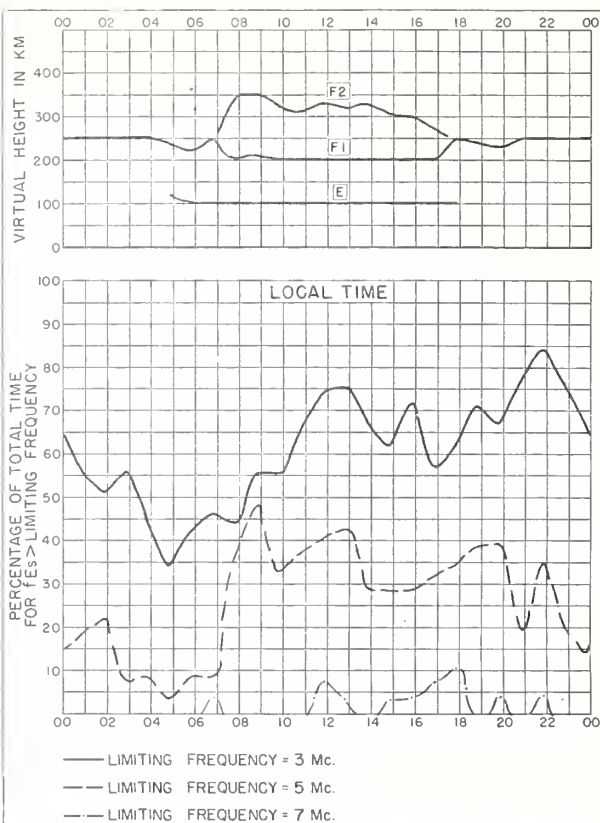


Fig. 134. HOBART, TASMANIA DECEMBER 1953

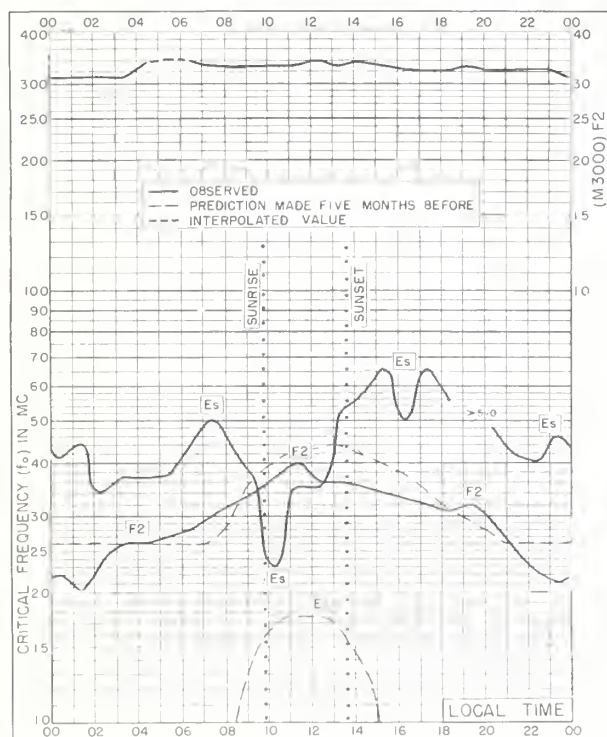


Fig. 135. GODHAVN, GREENLAND  
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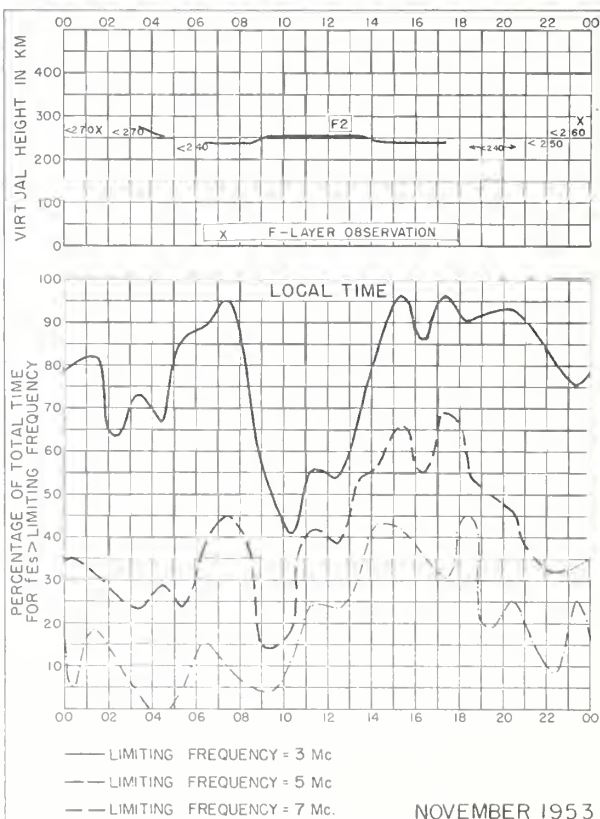


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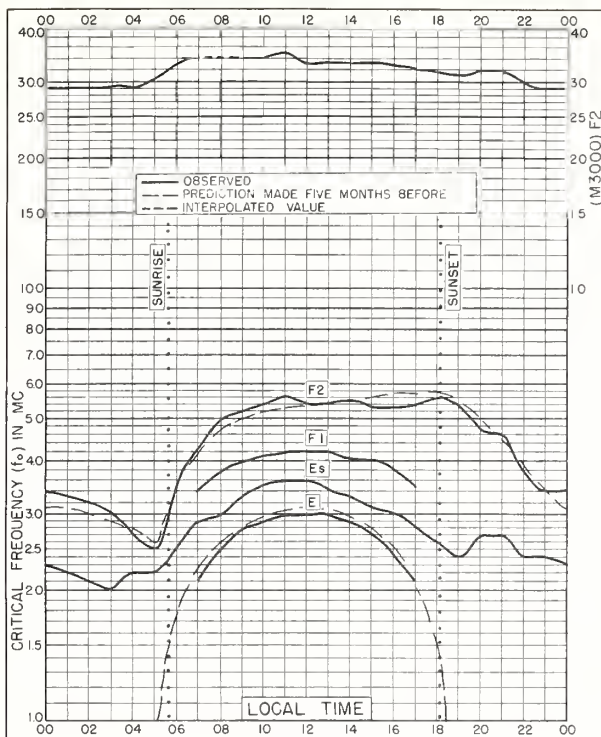


Fig. 137. POITIERS, FRANCE  
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SEPTEMBER 1953

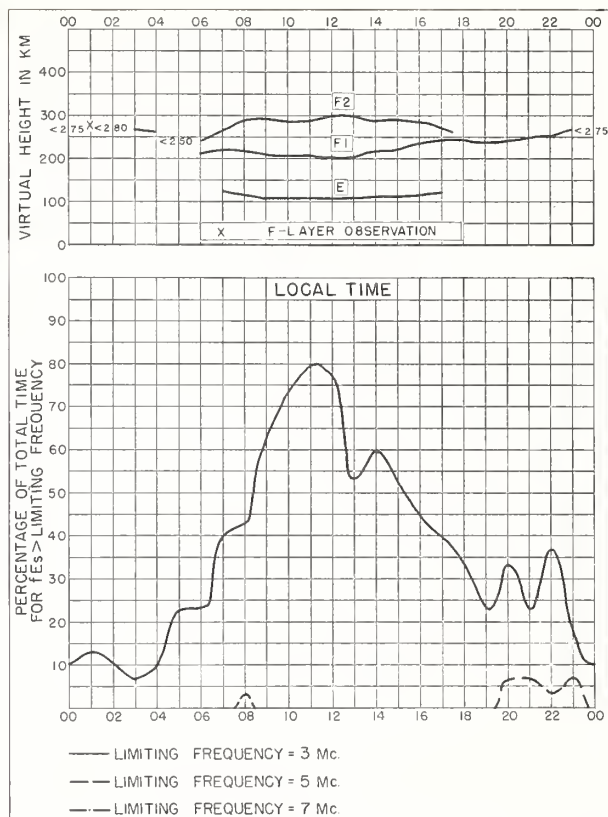


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SEPTEMBER 1953

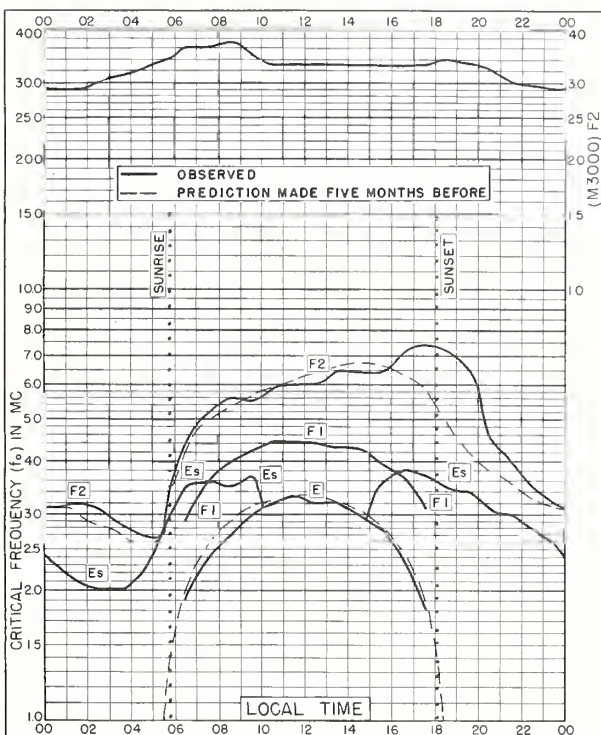


Fig. 139. CASABLANCA, MOROCCO  
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SEPTEMBER 1953

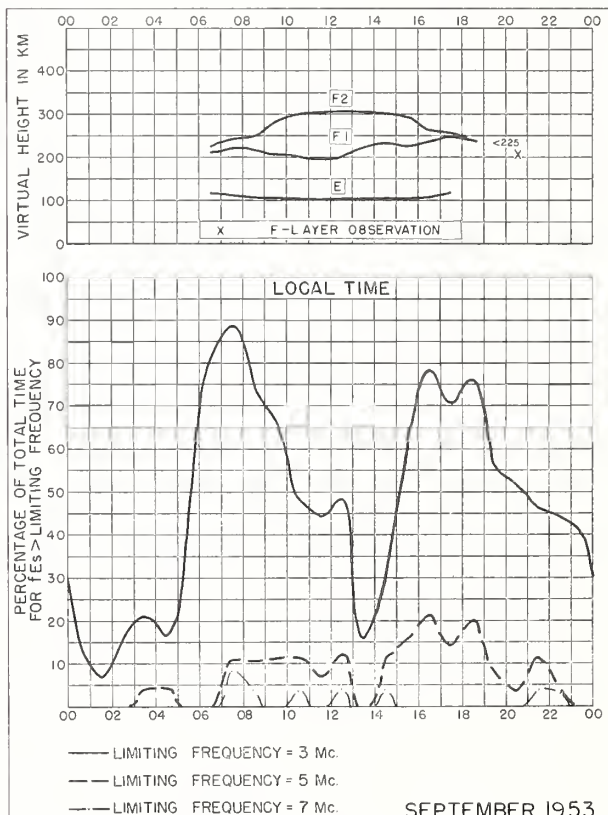


Fig. 140. CASABLANCA, MOROCCO

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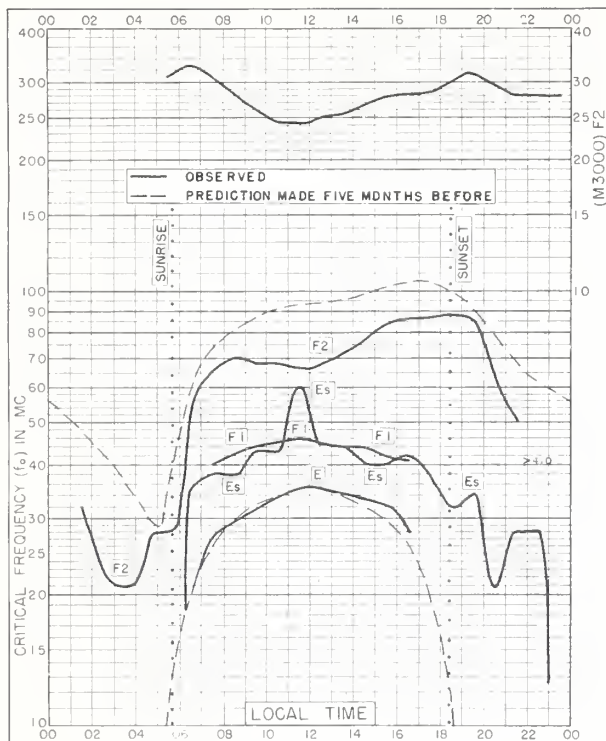


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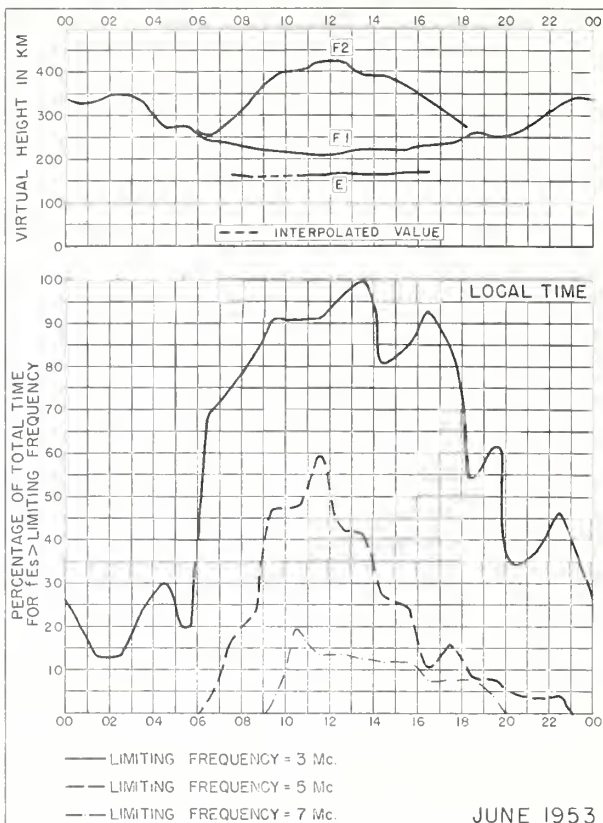


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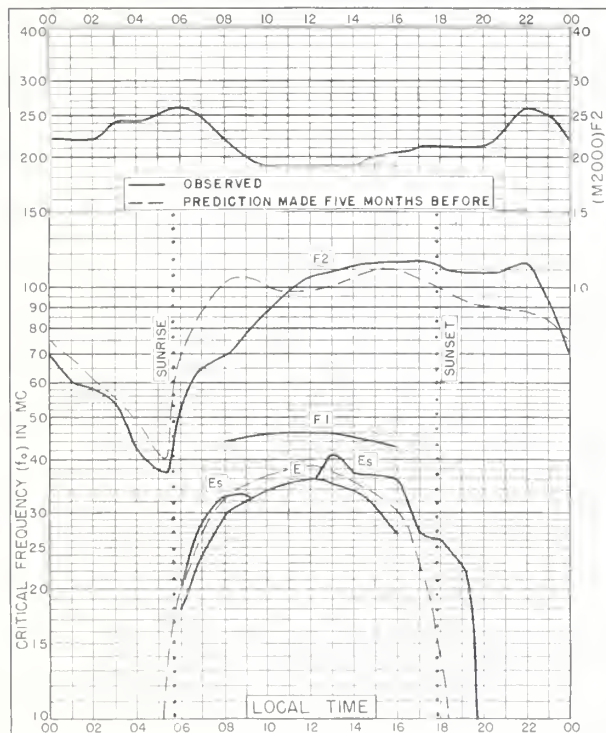


Fig. 143. LEOPOLDVILLE, BELGIAN CONGO  
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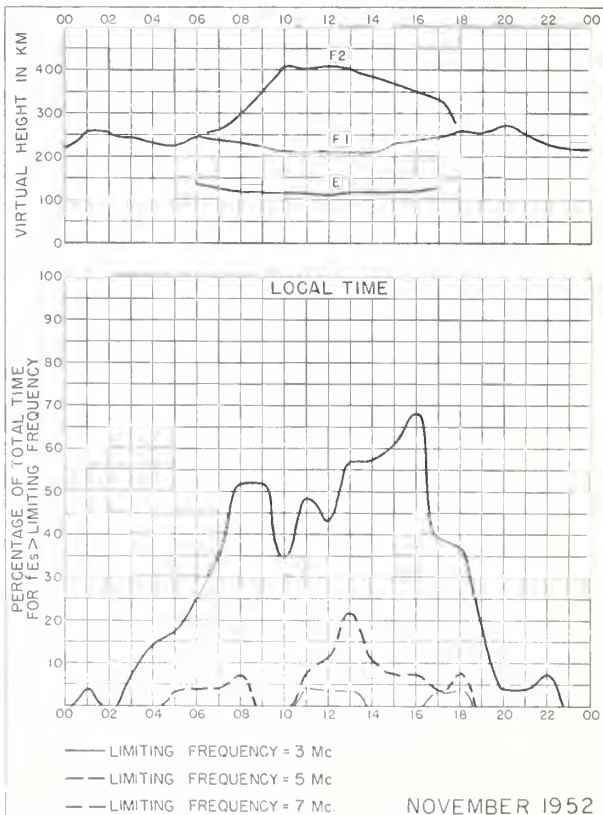


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